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The Condition of Public Education
with The 1994 Report of Progress toward the National Education Goals
Commonwealth of Massachusetts

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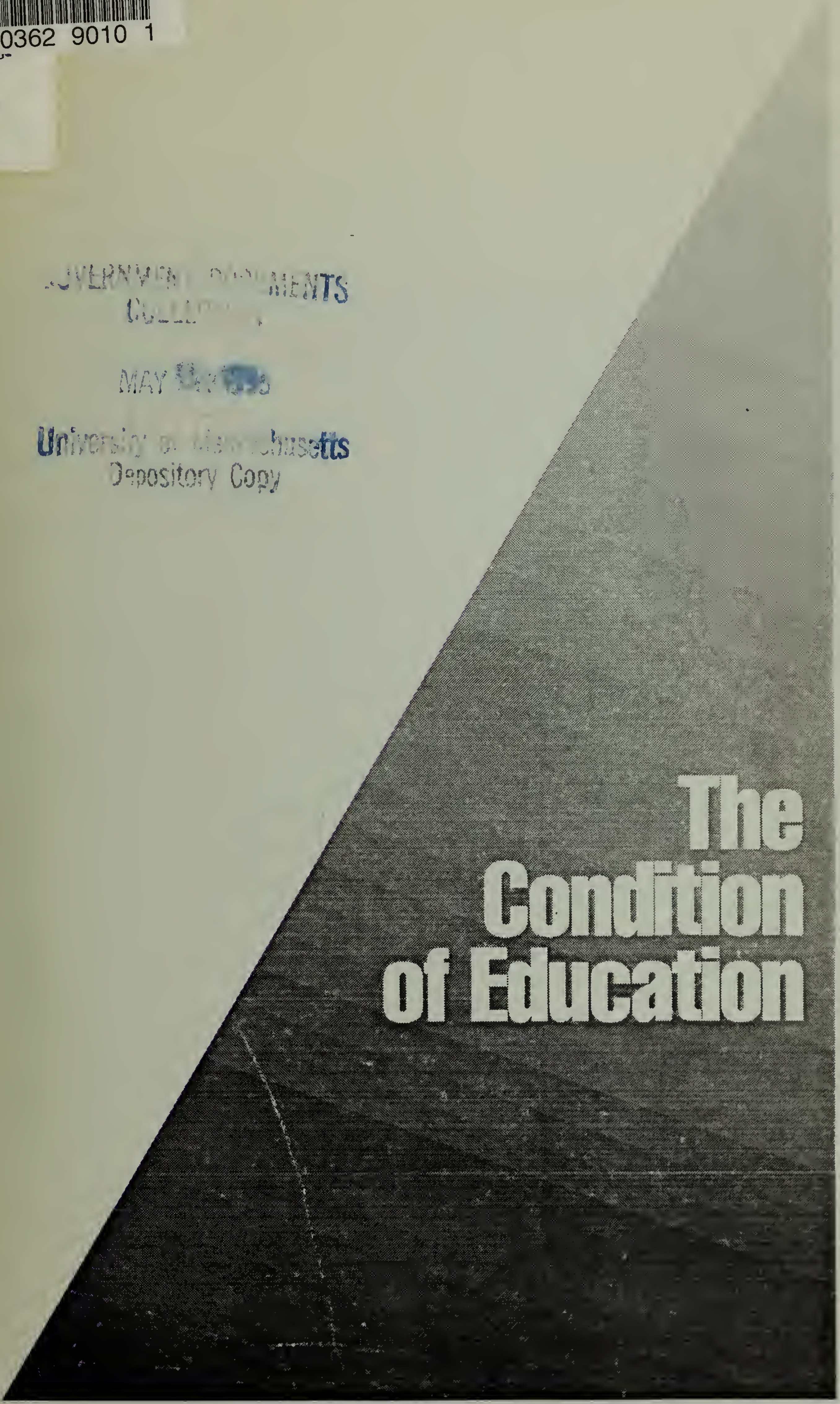

# The Condition of Education

2000
1999
1998
1997
1996
1995
1994
1993
1992
1991

William F. Weld, Governor
Paul Cellucci, Lieutenant Governor
Piedad F. Robertson, Secretary of Education

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# Education Goals for Massachusetts

In any journey, if you don't have a destination in mind, any road will do.

Such has been the case for public education in Massachusetts for too long. At the state level, if goals were established at all, such goals were often so loosely defined as to defy any accountability for success.

Many school committees and boards of trustees followed the state model. If any goals were established, they defied quantification or independent analysis. Progress was unascertainable but "successes" and "successful programs" were proclaimed at all levels of public education. The only problem, said these voices, was that there wasn't enough money.

The flaw with this discussion was that this was simply not true. While there were certainly issues in the equitable distribution of resources, the fact remained that students were not learning -- at many levels, throughout the public education system. The penultimate goal of public education, a graduate who was prepared to be an active participant in and contributing member of a democratic society was not being realized. Business leaders saw a rising cost to educate recent high school graduates with basic reading, writing and mathematical skills. College administrators admitted increasing numbers of students who wanted a college education but who were not prepared for college-level work. Beginning in 1983, the national scene saw a series of reports which clearly marked a decline in the accomplishments of the American education system.

This trend -- and the resulting effects on our society -- were not lost on national leaders. In 1989, the National Governors Association (NGA), led by Arkansas governor Bill Clinton, convened an educational summit with President George Bush. The President and the nation's governors issued a clarion call for improvement in our nation's schools, and established six national goals for education. The NGA also promised to develop a series of indicators which would track the states' progress on reaching the national goals; these indicators would be collected and published annually so that policymakers and the public could see whether change was actually happening in the schools.

The national trends were not ignored in Massachusetts. In 1985, an education reform bill was signed into law which sought to address several issues. With a heavy emphasis on incentives to recognize and reward certain school or district endeavors, the law suffered from a lack of any meaningful connection between activities supported by the new law and student achievement. Whatever benefits of the law -- however intangible -- were eroded by the economic crisis of 1988-91.

By mid-1991, Governor William Weld, legislative leaders and business leaders were all talking about the need for a fundamental reform of education, stressing the need for higher student achievement and for schools and school districts to be held accountable for results. After much discussion with legislative leaders, Governor Weld filed a bill calling for standards for student and teacher performance to be established, assessments to be established in the fourth, eighth and tenth grades, curriculum frameworks to be developed to provide guidance to local districts, significant changes in local governance to remove the politics from local school decision-making, enhancing the status of principals to be managers of their schools, school councils to promote school-based management, charter schools to promote innovative, 'break-the-mold' schools, and a $1.3 billion increase in funding to address the inequities of funding public schools.

After a circuitous path through the Legislature, the bill was signed into law on June 18, 1993. The bill incorporated many of the objectives which the Governor, the legislative leaders and business people saw as essential to any legislative reform. Among many other changes, the legislation recognized the fundamental lack of goals and clear indicators for the progress toward the goals of education.

In February of 1994, the Advisory Committee on Educational Policy[1] (CEP) undertook an initial discussion of educational goals, using the national goals established by the educational summit, augmented by other goals implicitly incorporated in the Education Reform Act and other important initiatives such as c. 495 of the acts of 1993 and c.142 of the Acts of 1991. In March 1994, the federal legislation, Goals 2000, addressing the national educational issues, was signed by President Bill Clinton. The six national goals were amended slightly and expanded to eight goals (parents and professional development were recognized by Congress as important components to successful schools). These eight goals served as the basis for the CEP's revised goals, which were augmented by four additional goals. These goals, as outlined below, were adopted in May 1994:

1. **All children will start school ready to learn.**
2. **The graduation rate will increase; for high school students, the graduation rate will be at least 90 percent.**
3. **All students will have demonstrated competency over challenging subject matter including English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography, and every institution of learning will ensure that all students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in a modern, competitive economy.**
4. **Students will be the first in the world in mathematics and science achievement.**
5. **Every adult will be literate, and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.**
6. **Schools will be free of drugs, violence, and the unauthorized presence of firearms and alcohol, and will offer a disciplined environment conducive to learning.**
7. **The teaching force will have access to programs for the continued improvement of their professional skills and the opportunity to acquire the knowledge and skills needed to instruct and prepare all American students for the next century.**
8. **Every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children.**
9. **The missions of all sectors (elementary and secondary schools, vocational schools, community colleges, state colleges and the University of Massachusetts) of the public education system will be clearly defined and integrated to provide an efficient and accountable continuum of learning for a prosperous, productive Massachusetts.**
10. **Schools, colleges, and universities will be linked through technology to state agencies, public libraries and other opportunities for learning, personal development and economic opportunities.**

11. **Public education will be accessible and provide an equitable opportunity to learn.**
12. **There will be multiple standards for determining progress on these goals in order to foster meaningful accountability to students, parents, policymakers and the public.**

These twelve goals serve as the unifying comprehensive goals for education in Massachusetts. The recently-adopted Common Core of Learning is one of the more important documents which has been produced by the Board of Education. The Common Core serves as the guide for student learning in our schools -- not the goals for the public education system. Similarly, the report issued by the Board's education reform oversight committee is an important management tool for the Board and the Commissioner to assess the progress on education reform; it too does not serve as the systemic goals for education.

### The Condition of Education

A word about this *Condition* report...

Another part of the Education Reform Act directed the Secretary of Education to publish annually a report on the *Condition of Education* in Massachusetts. In addition, the National Governors Association asks the states to compile a state report on the progress on the national education goals. The *Condition of Education* published annually by the U.S. Department of Education, coupled with the requirements for the NGA report on the state's progress toward the national goals, serves as the basis for the Commonwealth's first *Condition* report. The indicators used in this report are suggested by the NGA report requirements, with additional indicators developed by the Executive Office of Education.

There are many other indicators which one would hope to include in future *Condition* reports. Both the Department of Education and the Higher Education Coordinating Council are committed to developing a system for more current information.

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[1] The Advisory Council is established by M.G.L. c. 15 § and is made up of the executive committees of the Higher Education Coordinating Council and the Board of Education.

# Trends in Population, Enrollment, Investment and Expenditures

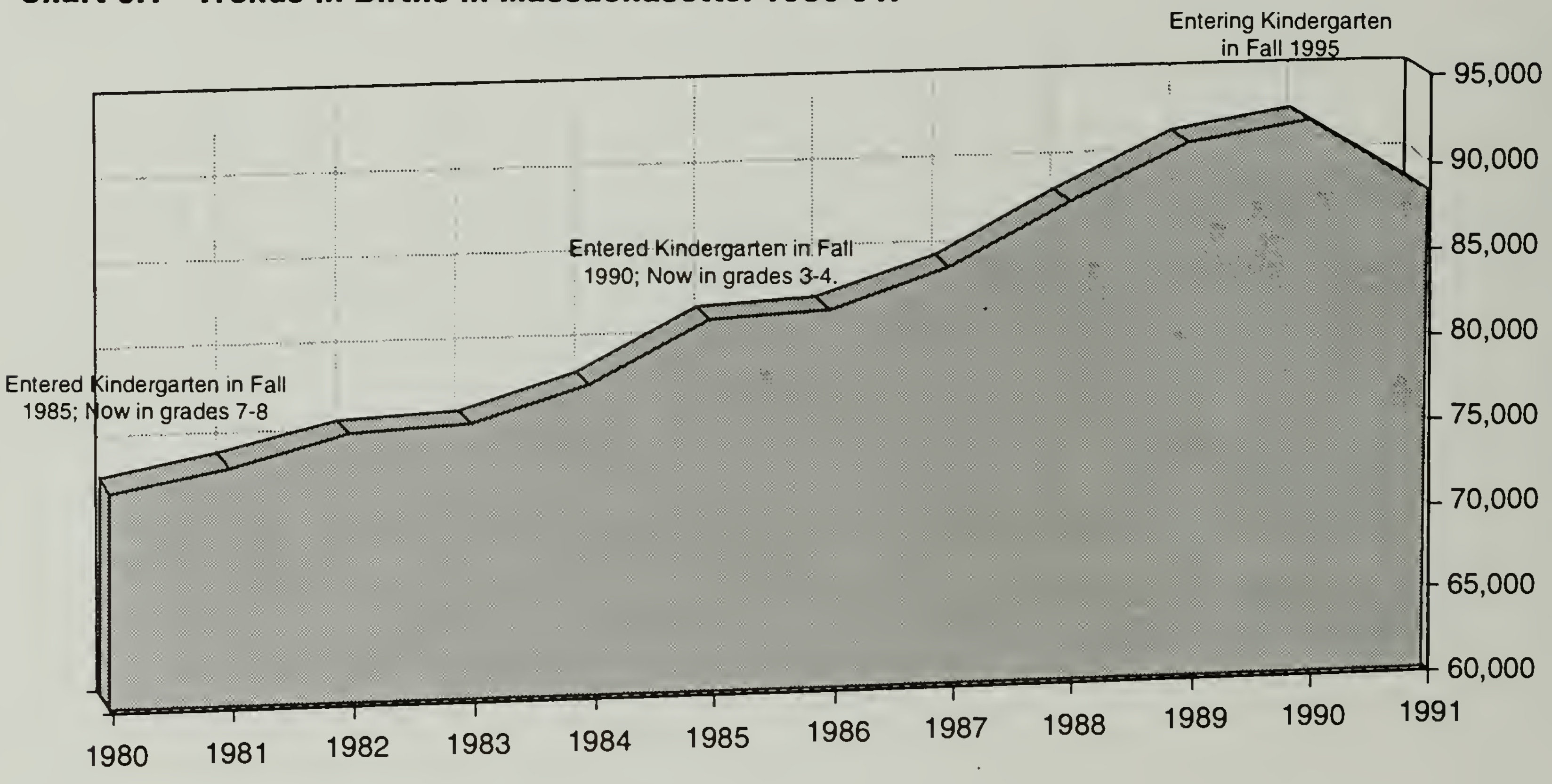
## Topic: Trends in Births and Enrollment: K-12

The number of births increased significantly in the 1980's. However, the rise in the number of births was broken in 1991. It is premature to say whether this is an indication of a new trend. As Chart 0.1 demonstrates, the recent peak in births will not affect school enrollments until the fall of 1995.

As illustrated by Chart 0.2, the last decade saw a marked decline in student enrollment in Massachusetts public schools. In comparing the student populations of 1982-83 with that of 1991-92, there were nearly 7% fewer students in public schools.

- The 1989-90 school year saw the nadir of this decline with the student population increasing in the following years.

**Chart 0.1 - Trends in Births in Massachusetts. 1980-91.**

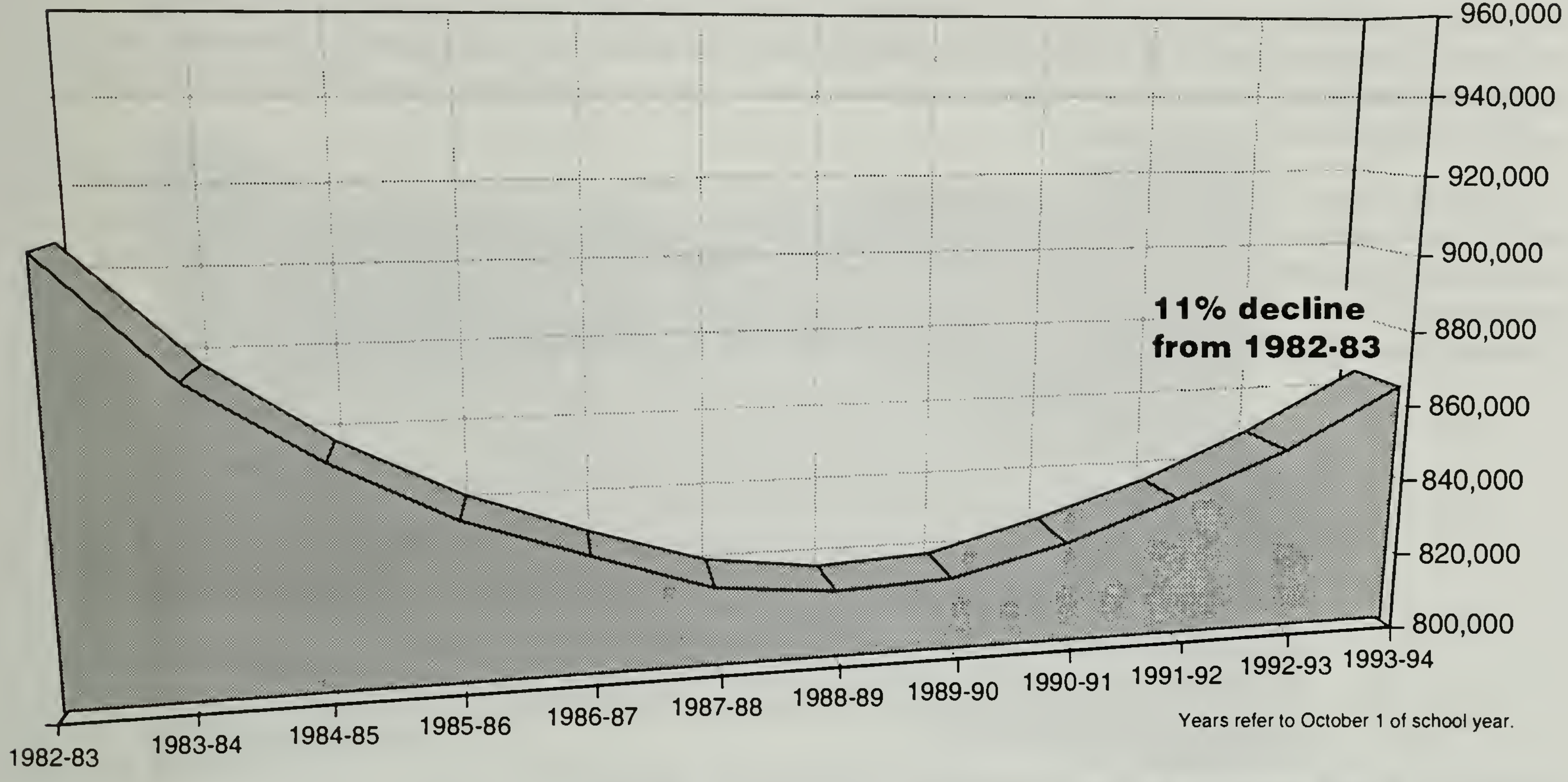


*Source: Massachusetts Department of Public Health*

- As the increase in births is followed by a 5-6 year lagging increase in student enrollment, Chart 0.3 portrays the difference in populations for the K-6 grades on a grade-by-grade basis when comparing the 1993-94 school population with the 1983-84 population. With an overall increase of 22% in the elementary population, there will be new demands on schools for space and elementary school teachers.

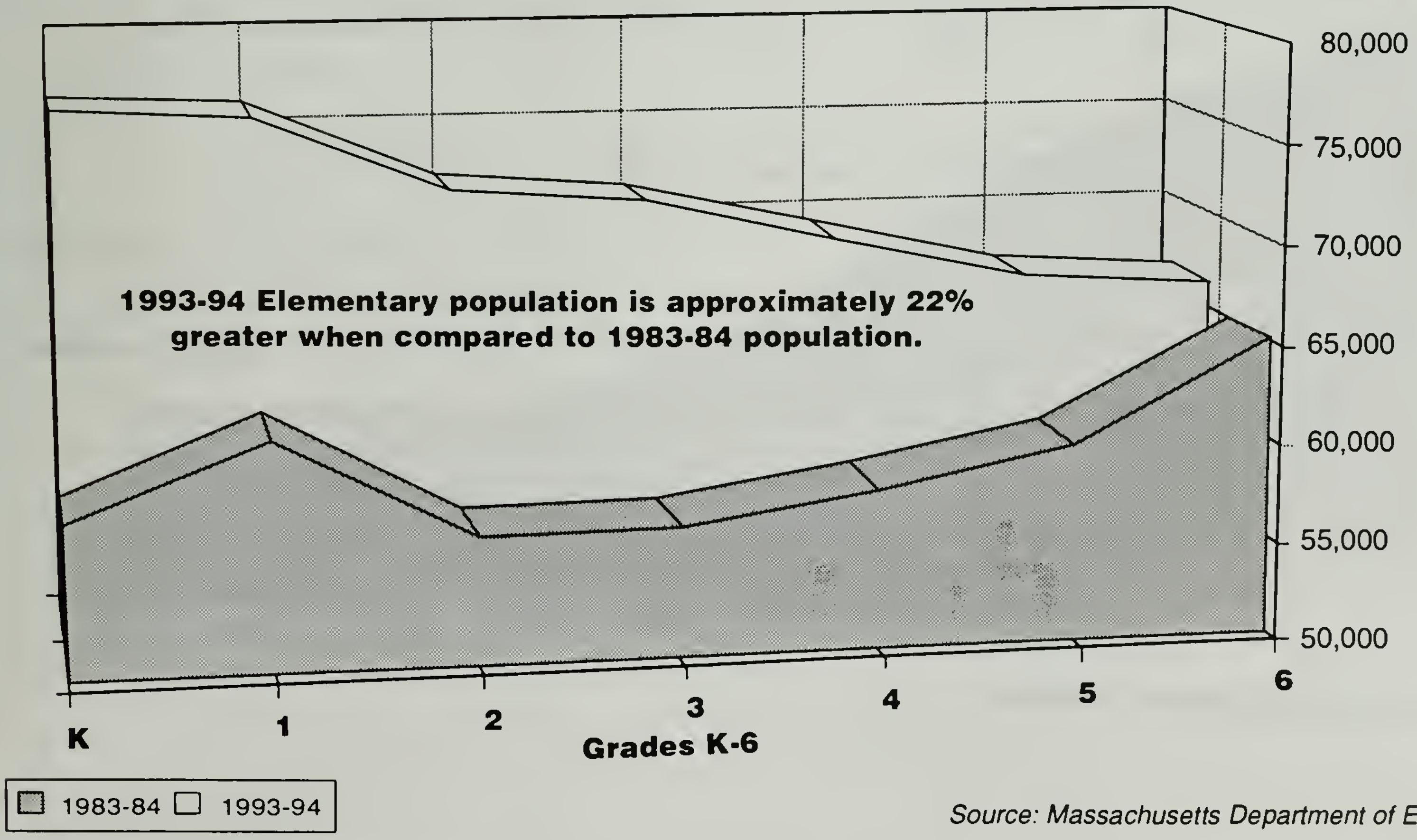
## Additional Important Information to Evaluate Improvement in Education: Student Population Trends

**Chart 0.2. Changes in public K-12 student population. Fiscal Years 1983-94**



*Source for all student population data: Massachusetts Department of Education*

**Chart 0.3 - Grade-by-grade comparison: 1983-84 compared to 1993-94.**



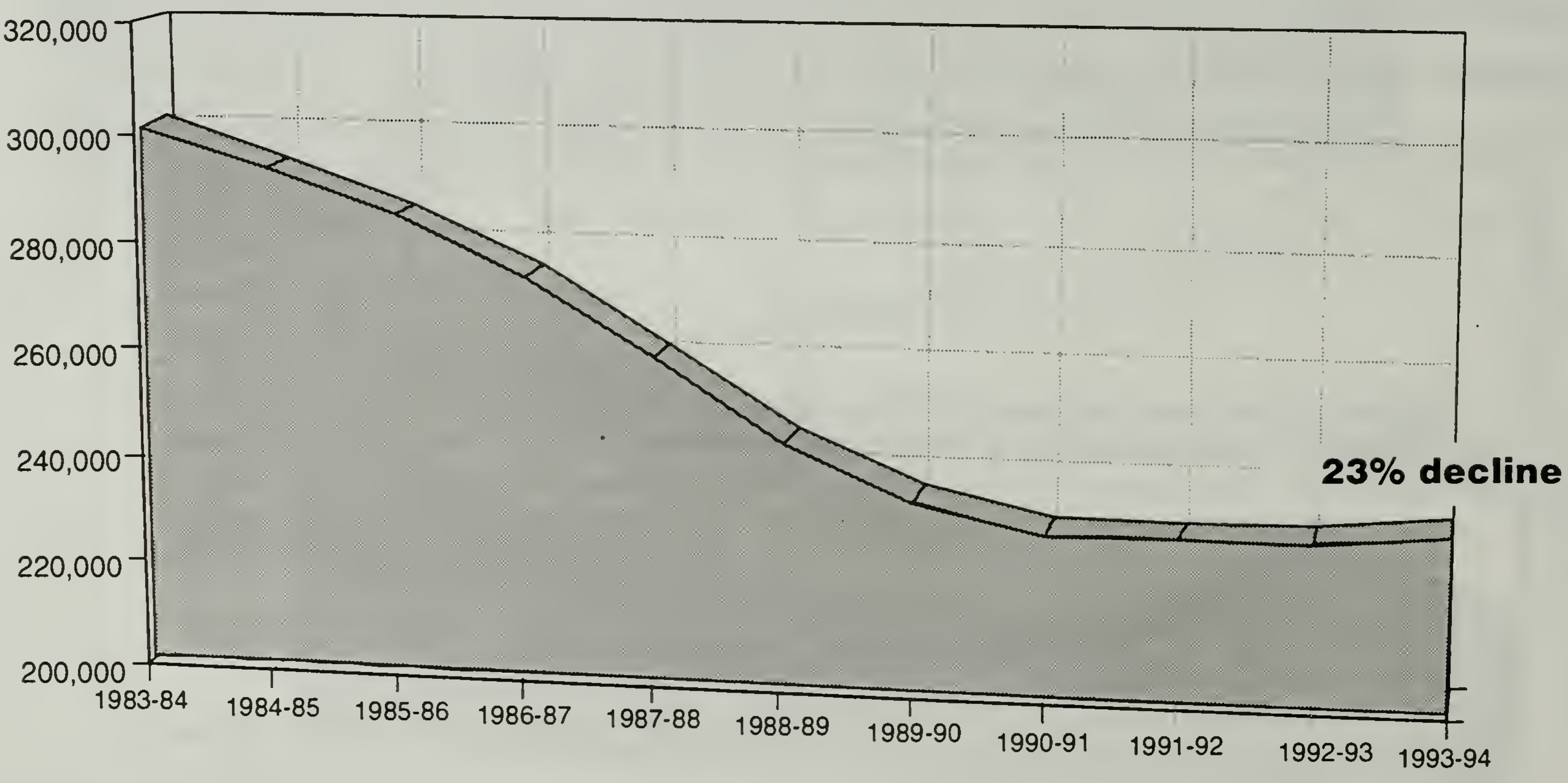
*Source: Massachusetts Department of Education*

## Topic: The Population in High Schools and Public Higher Education Enrollment

As noted earlier, the decline in student population is not uniform and the increase in births has a 5-6 year lag before the kindergarten classes are impacted. Obviously, the effect of any increase in births/ enrollment has a much longer lead time before we would see the impact on the high school population. As illustrated in Chart 0.4, there has been a marked decline in the high school population. While there has been a slight increase in the high school-age population since the late 1980's, one can expect to see a larger high school population in 4-6 years as the students who are currently in the middle school grades begin to graduate from high school.

As the number of births has an obvious impact on the elementary school population, one would expect that the sharp decline (23%)in the number of high school graduates would also result in a similar decline in full-time enrollment in the state public higher education system. However, such has not been the case as shown by Chart 0.5. The population in the UMass system declined by 4%, the population in the community college system declined by 1% and enrollment in the state colleges hardly declined at all.

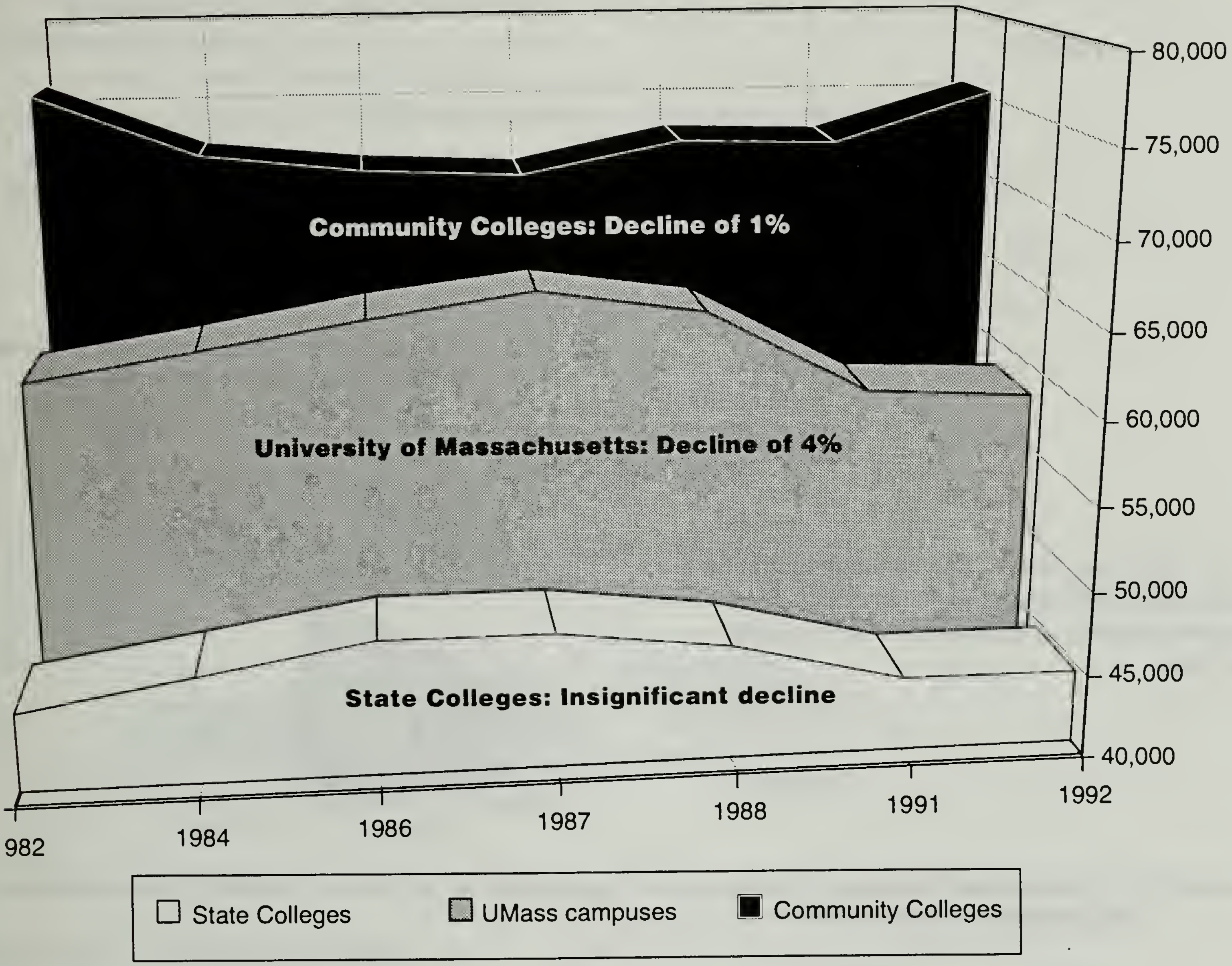
**Chart 0.4. Trend of High School Enrollment. 1983-84 to 1993-94.**



Source: Massachusetts Department of Education

## Additional Important Information to Evaluate Improvement in Education: Student Population Trends in Public Secondary Schools & Public Higher Education

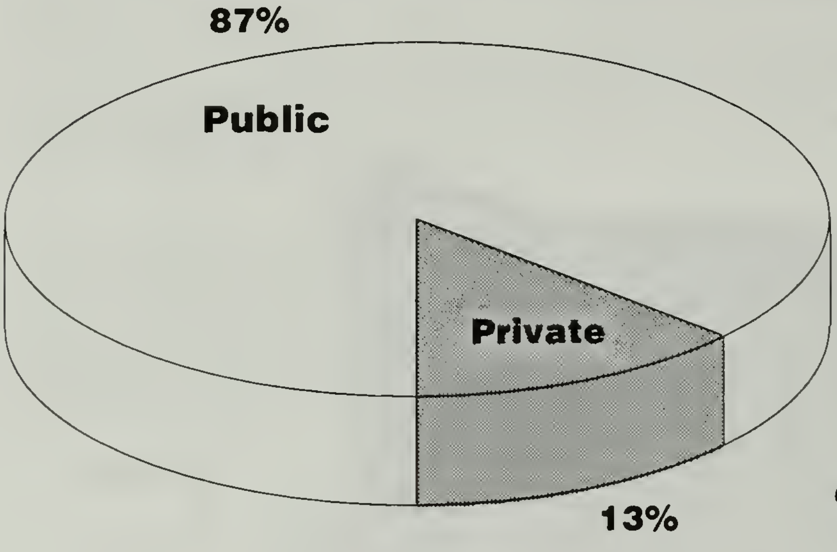
**Chart 0.6. Trends in public higher education enrollment - by sector**



Source: Higher Education Coordinating Council

## Topic: Choices in K-12 population

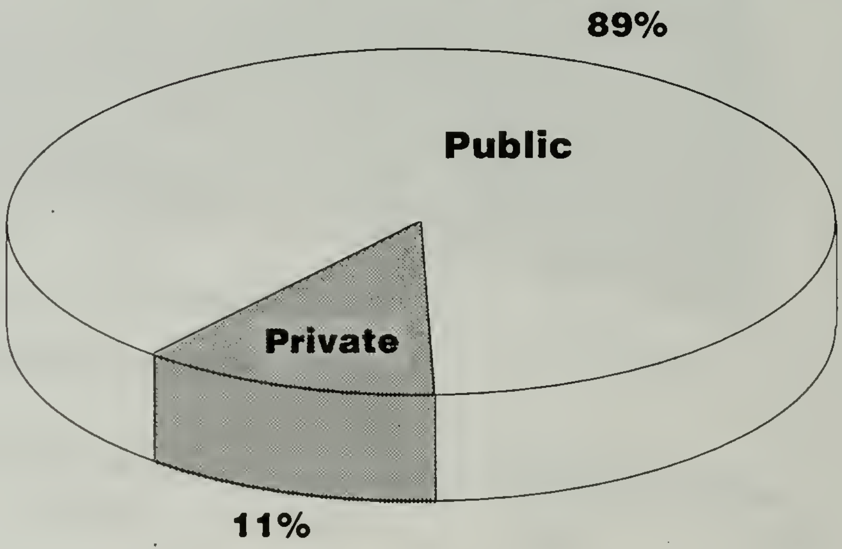
**Chart 0.8. Percentages of school-age population in public and private schools: 1983**



Choice has always been part of the educational offering to parents in both the higher education and the K-12 systems. The choice has traditionally been an issue of public or private education.

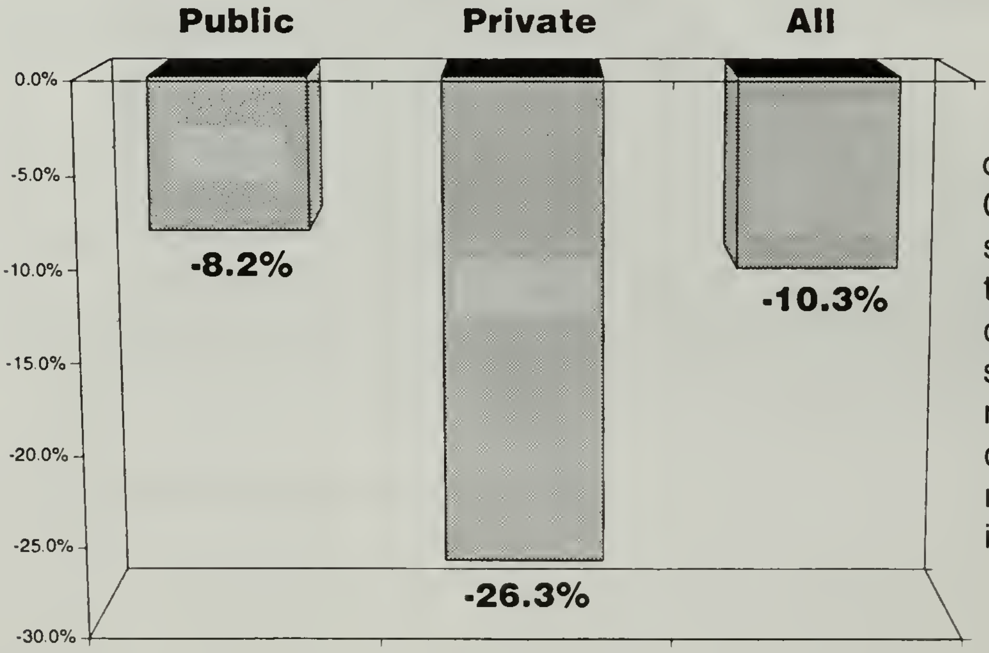
In 1983, the percentage of Massachusetts school-age children in public schools was 87%, with 13% in private schools.

**Chart 0.9. Percentages of school-age population in public and private schools: 1993**



By 1993, the percentage of Massachusetts school-age children in public schools had increased slightly, to 89%, with 11% in private schools.

**Chart 0.10. Percentage changes of school-age population in public and private and all school-age children: 1983-1993**

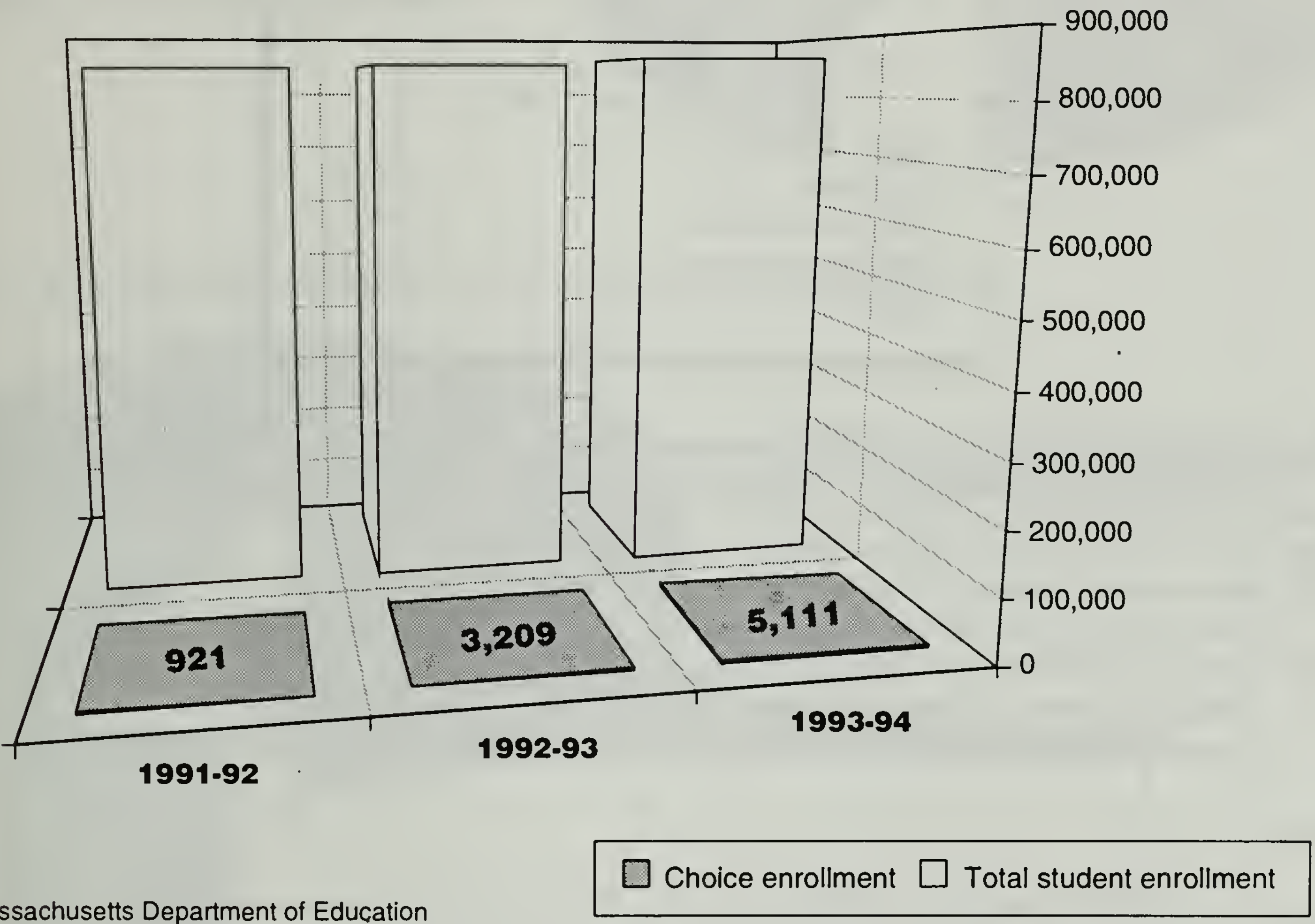


The changes in the school-age children were not uniform, as Chart 0.10 illustrates. While the overall school-age population declined by more than 10% between 1983 and 1992, the decline was far greater in the private school population. Part of this decline may be attributed to the economic downturn; however, it may also be a reflection of a growing confidence in improving public schools.

## Additional Important Information to Evaluate Improvement in Education: Choices in Education

In 1991, a school choice program was enacted by the legislature and signed into law by Governor William Weld. As noted in *School Choice: Why Parents Choose Choice*, a report issued by the Executive Office of Education in 1994, the overwhelming reason parents choose a new school district is an improved academic program.

**Chart 0.11. FTE enrollment in school choice in first 3 years of school choice.**



Source: Massachusetts Department of Education

- Participation in school choice has increased by 455% since the initiation of school choice in 1991. This is largely the result of more districts participating in school choice. However, enrollment in school choice in 1993-94 represents less than 1% of the total K-12 school population.
- Participation in school choice by school districts has been something less than uniform. There are still few districts within the Route 128 belt (Greater Boston area) which are participating in school choice; no districts contiguous to Boston participate. Furthermore, there were few options available to parents and students in the southeastern part of the state. However, the northeastern area, Metro-west and Berkshires had a number of school districts participating in choice. Finally, as school districts fill their available space, and as fewer new districts are opting to open up to school choice, there appears to be limited growth potential for parents seeking new schools. The lack of opportunity may also limit choice as a tool for school improvement.

## Topic: Diversity in K-12 population

Changes in student population in the past decade were not simply a shift in grade populations. There was a clear trend toward a more diverse student population, with substantial increases in the Hispanic and Asian populations. Although the Asian population increased by the largest percentage in the decade, the Hispanic student population had the largest increase in the actual number of students.

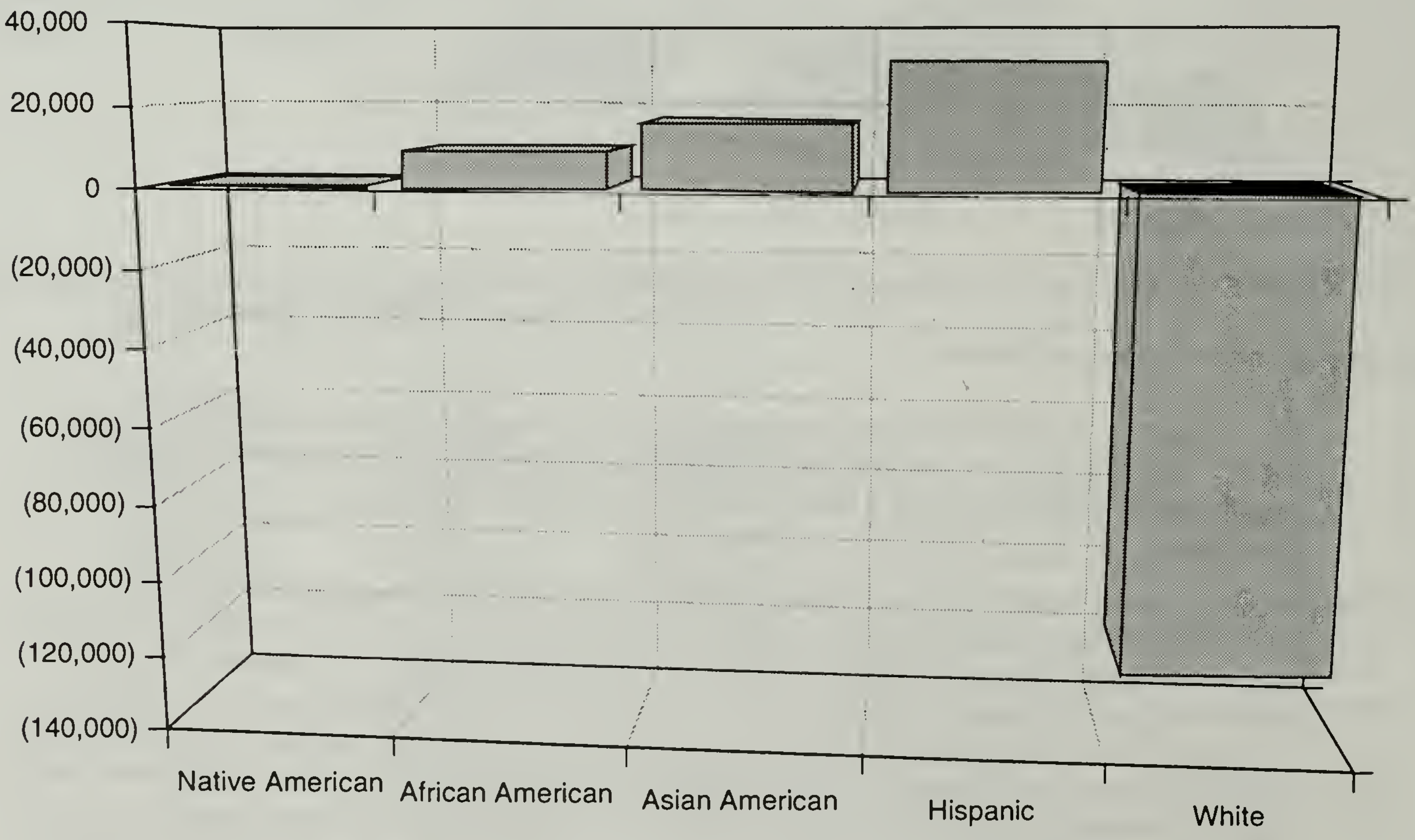
- By the end of the 1980's, Hispanic students constituted the second largest racial/ethnic group in the public schools in the Commonwealth.

**Table 0.1**

*Percentage Change in Diversity of K-12 Student Population 1983-93*

| | |
|---|---|
| Asian American | 143.1% |
| Hispanic | 105.0% |
| Native American | 44.6% |
| African American | 23.8% |
| White | -13.1% |

**Chart 0.12. Changes in diversity of K-12 student population 1983-93 (According to numbers of students)**

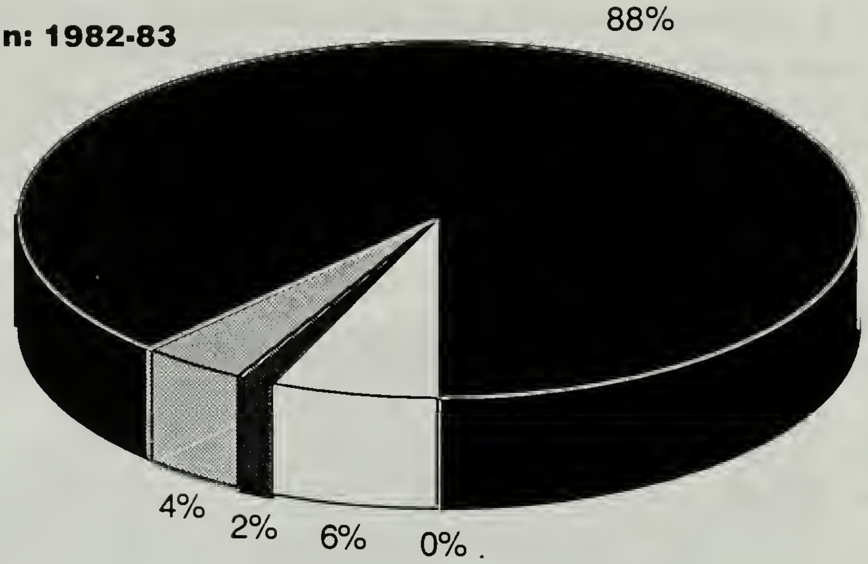


*Source for all student population data: Massachusetts Department of Education*

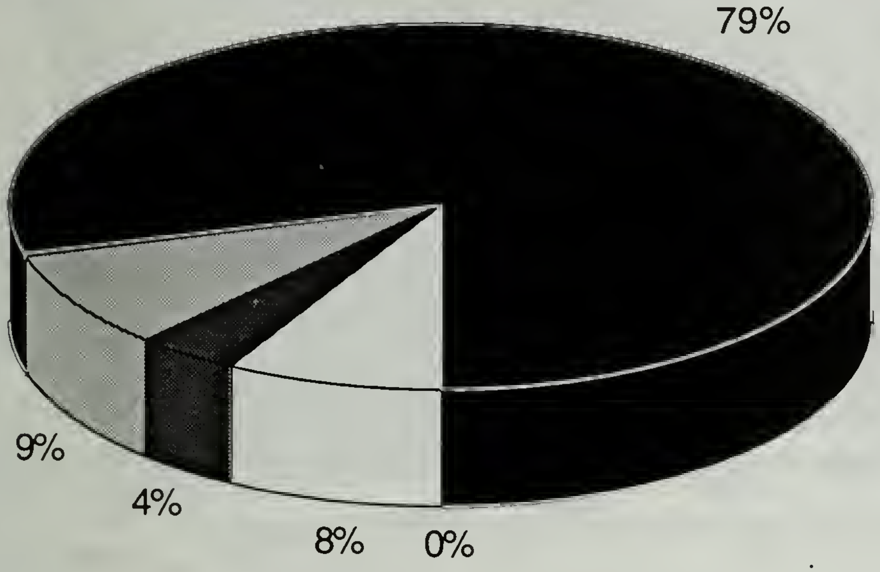
## Additional Important Information to Evaluate Improvement in Education: Diversity in the Student Population

### Chart 0.13. Diversity in the Student Population: 1982-83

In 1982-83, the white student population comprised 88% of all students in the K-12 population. African-American students (6%) and Hispanic students (4%) made up the next largest segments of the student population.



### Chart 0.14. Ten years later: Diversity in the Student Population: 1992-93



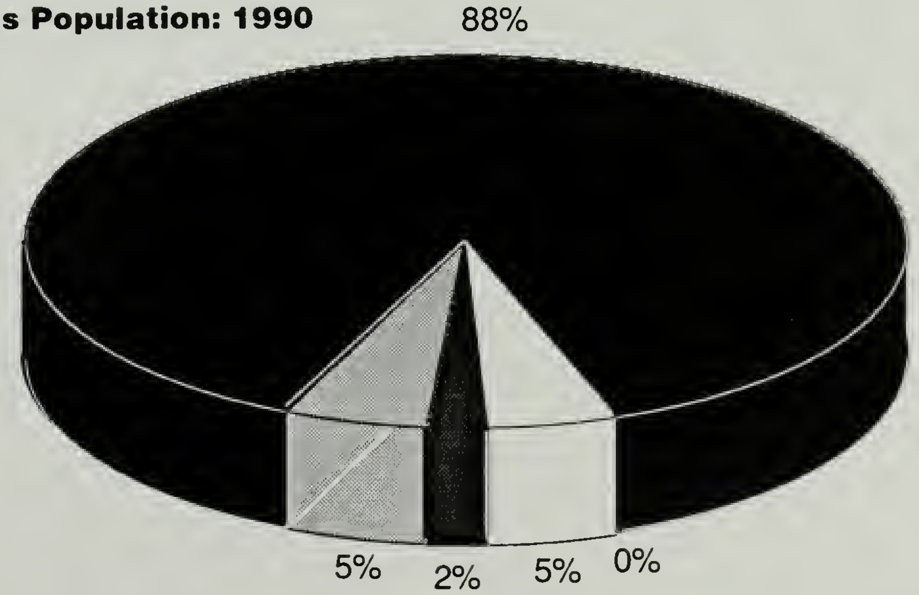
The changes in student population trends over the decade resulted in a very different student population. The percentage of white students dropped to 79%, while virtually all other segments increased. The white K-12 student population did not simply decline in percentage terms; there were actually 120,000 less white students in public K-12 schools by the end of the decade.

▨ Native American ☐ African American ■ Asian American ▨ Hispanic ■ White

*The legend reflects all three charts on this page*

### Chart 0.15. Diversity in the Massachusetts Population: 1990

As one might expect, the changes in diversity are being seen first in the schools. The racial and ethnic population of Massachusetts at the end of the decade resembled Massachusetts' schools at the beginning of the decade, not the more diverse population of the 1990's.

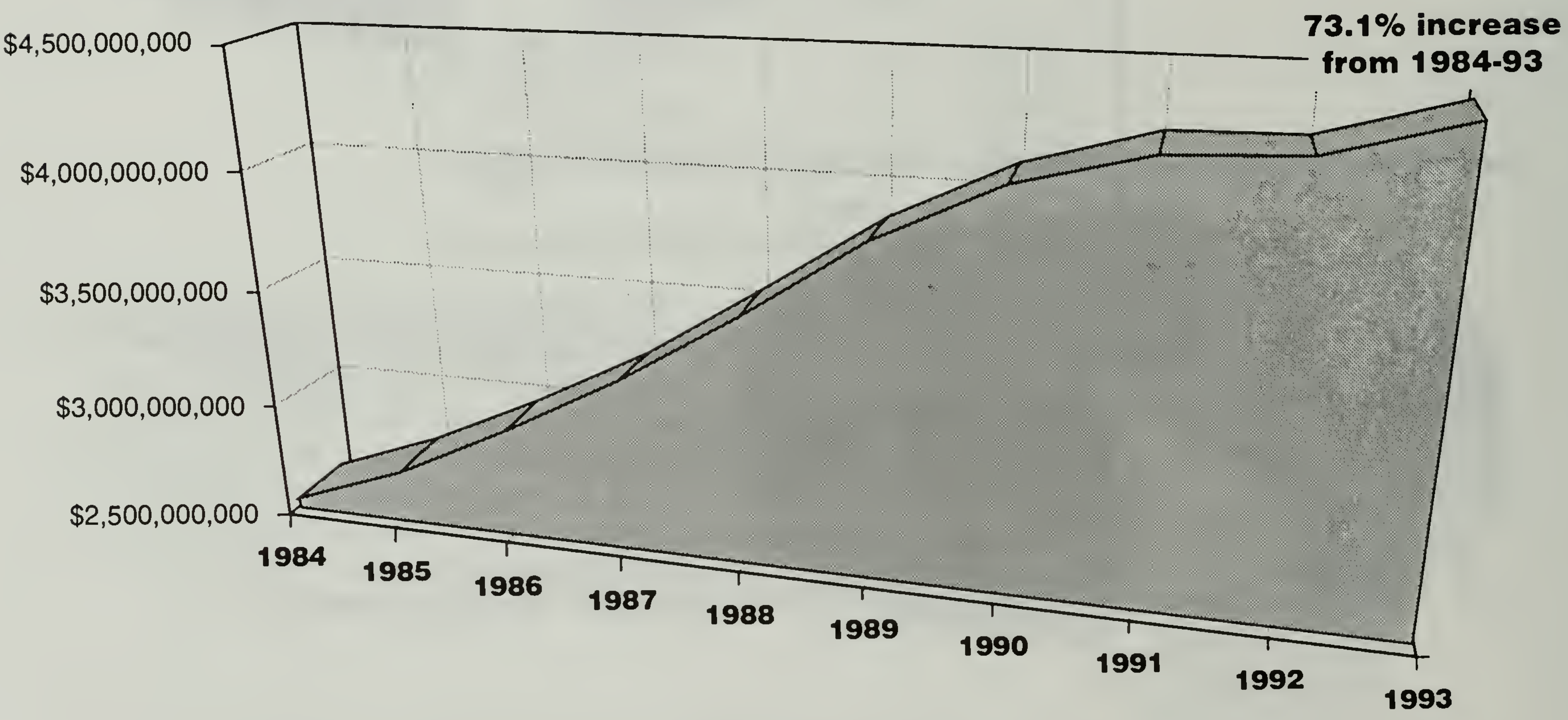


Source: U.S. Census Bureau

## Topic: The investment in K-12 public schools

In 1982-83, Massachusetts was spending just under $2.5 billion for K-12 operational costs (excluding school building costs). By the 1992-93 school year, such expenditures had increased by more than 73%. This increase came as the state and communities sought to address the issues raised by the *Nation at Risk* report, and the spate of other reform reports, by increasing spending with the expectation that such increases would result in higher levels of student achievement.

**Chart 0.16. The aggregate increase in public school expenditures: 1984-1993**

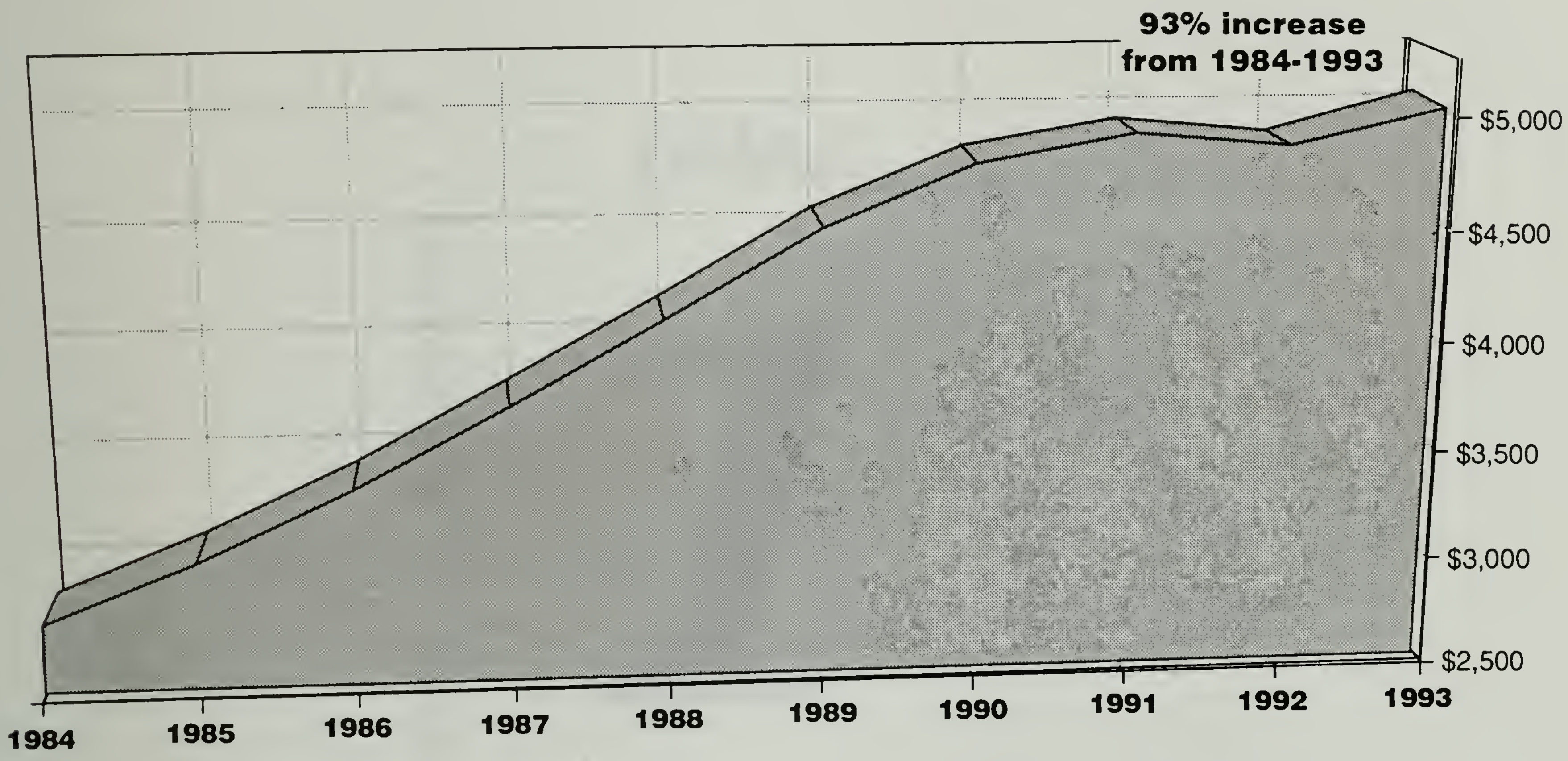


**73.1% increase from 1984-93**

- The average rate of increase in the 1984-93 period was 7.3%.

## Additional Important Information to Evaluate Improvement in Education: Overall investment in public K-12 education

**Chart 0.17. Increase in average total per-pupil expenditures. 1984-93.**



This increase in K-12 spending occurred at a time when the student population was declining. The result was a marked increase in the per-pupil expenditures for the 10-year period.

- Generally, Massachusetts ranked among the top 10 states in per-pupil-expenditures throughout the decade.

# *GOAL*

# *1*

# Ready to Learn

A child who is well-nourished, healthy, who has acquired basic social and language skills, and who is from a stable environment at home, is a child who is prepared to learn. For most of our children, this is their experience as they are prepared by their parents or guardians for school.

However, some children in this state don't receive the early childhood opportunities that most children enjoy. Low-income families are less often able to provide adequate health care, child care, or the rudimentary educational skills for their children. Some children arrive at school ill-prepared to learn because they come from abusive or dysfunctional families. Others learn fear from the violence of their neighborhoods and this pervasive fear prevents them from focusing on school and learning.

Massachusetts assists disadvantaged families by strengthening their ability to care for their children in a healthy and stable environment.

Even with the breadth of state and federal assistance, some families and children still fall behind. Although there exists no report currently used to assess incoming kindergarten students in Massachusetts, indicators suggest there are still a substantial minority of our children who arrive at elementary school inadequately prepared to learn. Nationally, a 1992 Carnegie Foundation survey of more than 7,000 kindergarten teachers nationwide, reported that more than one-third of the nation's children began school unready to learn. For a variety of reasons, it might be expected that the percentage in Massachusetts is less than the national figure -- but still a substantial issue.

Several recent initiatives are designed to ensure that all children arrive at school "ready to learn":

- The Education Reform Act of 1993 had several sections which addressed the need to adequately prepare children for school.
- The Childhood Hunger Relief Act, another recent legislative enactment provides further assistance in ensuring a healthy start to school. The Childhood Hunger Relief Act sets an ambitious goal of meeting nutritional needs of school-age children.
- Massachusetts also inaugurated a $1.5 million "school-linked services" program to enhance the coordination of school-based social and educational services.

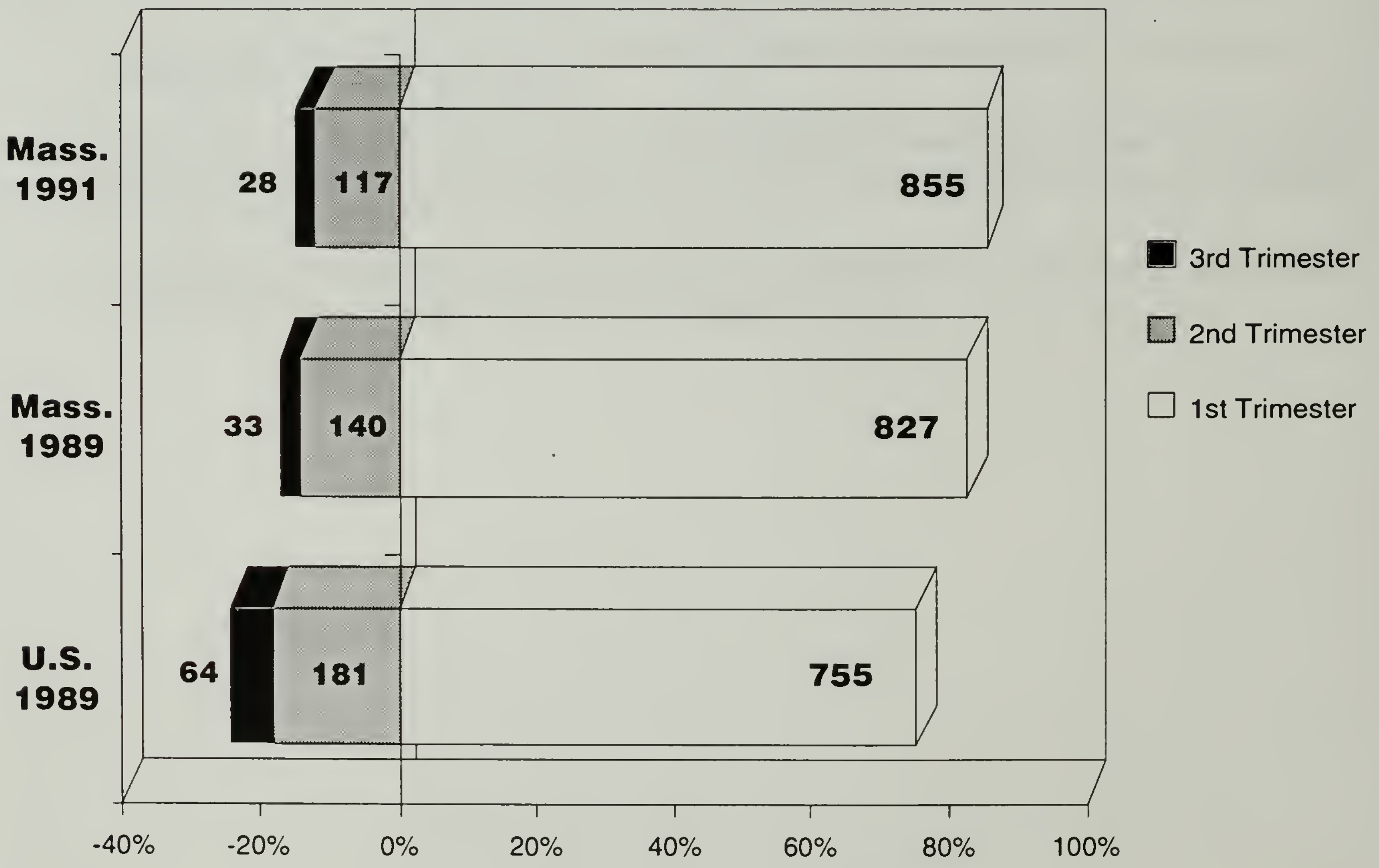
## Topic: Adequate Care for a Healthy Start

The beginning of a quality education begins with the care of a child. Research has demonstrated a consistent pattern for children: early prenatal care means a healthier baby. A healthy baby means fewer illnesses in childhood, less developmental problems and a greater chance to be ready to learn.

The Index of Adequacy of Prenatal Care defines adequate care as nine or more prenatal visits beginning in the first trimester of pregnancy. Over the last decade, there has been only a small variation in the level of adequate prenatal care in the Commonwealth. In 1991, the percentage of women receiving adequate prenatal care in Massachusetts was 81.5%, which is a decade-high level and is 3.2% higher than the decade low level of 78.2% recorded in 1987.

- In 1991, women in Massachusetts who received prenatal care only in the third trimester of pregnancy, or who received no prenatal care at all, were more than twice as likely to deliver low birth weight babies (12.8% to 5.2%).
- In 1989, Massachusetts ranked 6th among states with 82.7% of its expectant mothers receiving prenatal care in the first trimester of pregnancy.
- In 1991, the percentage of women receiving first trimester care increased to 85.5%.

**Chart 1.1. Time when Expectant Mother First Begin Prenatal Care**

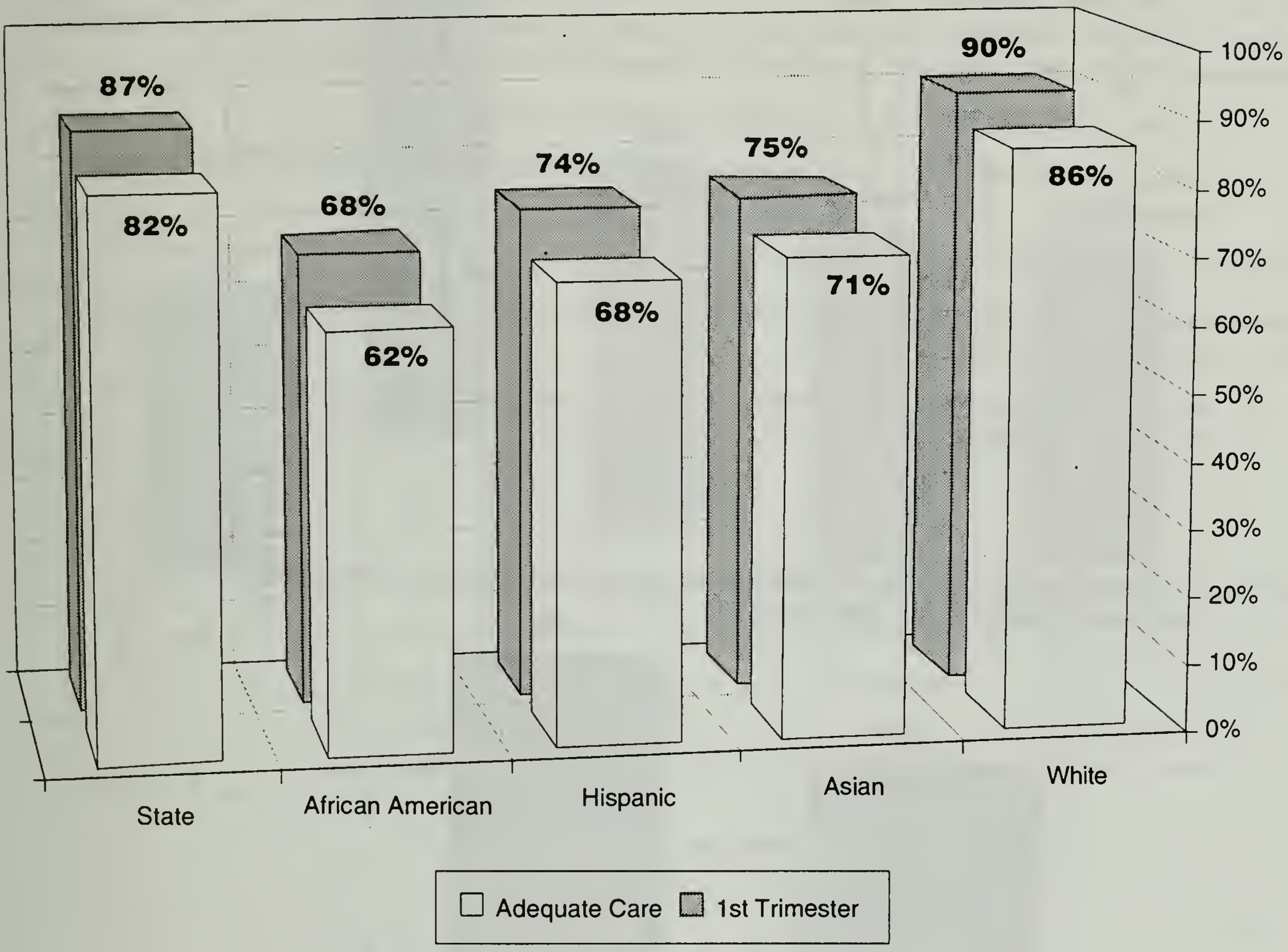


Numbers represent the number of mothers per 1,000 births

*Source: Massachusetts Department of Public Health*

## A Direct Measure of Progress toward Goal: Adequate Prenatal Care

**Chart 1.2. Differences by Race of Early Prenatal Care in Massachusetts**



- In 1989, low weight births accounted for 6% of all births in Massachusetts (12th lowest among states) and 7.1% of all births in the U.S. In 1991, this picture of low weight births improved slightly as such births accounted for 5.9% of all births in Massachusetts.
- While first trimester rates have improved among all racial groups, there remains a large gap among racial/ethnic groups. The effect of this disparity is most telling in comparing low birth weight rates within Massachusetts.

### Topic: Low Birth Weight

Low birth weight has been associated with lower academic performance of that child in school. Accordingly, if a state is able to minimize the incidence of low birth weight, then one should expect a better opportunity for learning in the future for these children.

A low birth weight is considered under 5.5 pounds. In Massachusetts, the low birth weight rate has not significantly changed over the past decade. In 1991, low weight births accounted for 5.9% of all births, as compared to 6.1% in 1980. However, a wide variance again remains between ethnic groups:

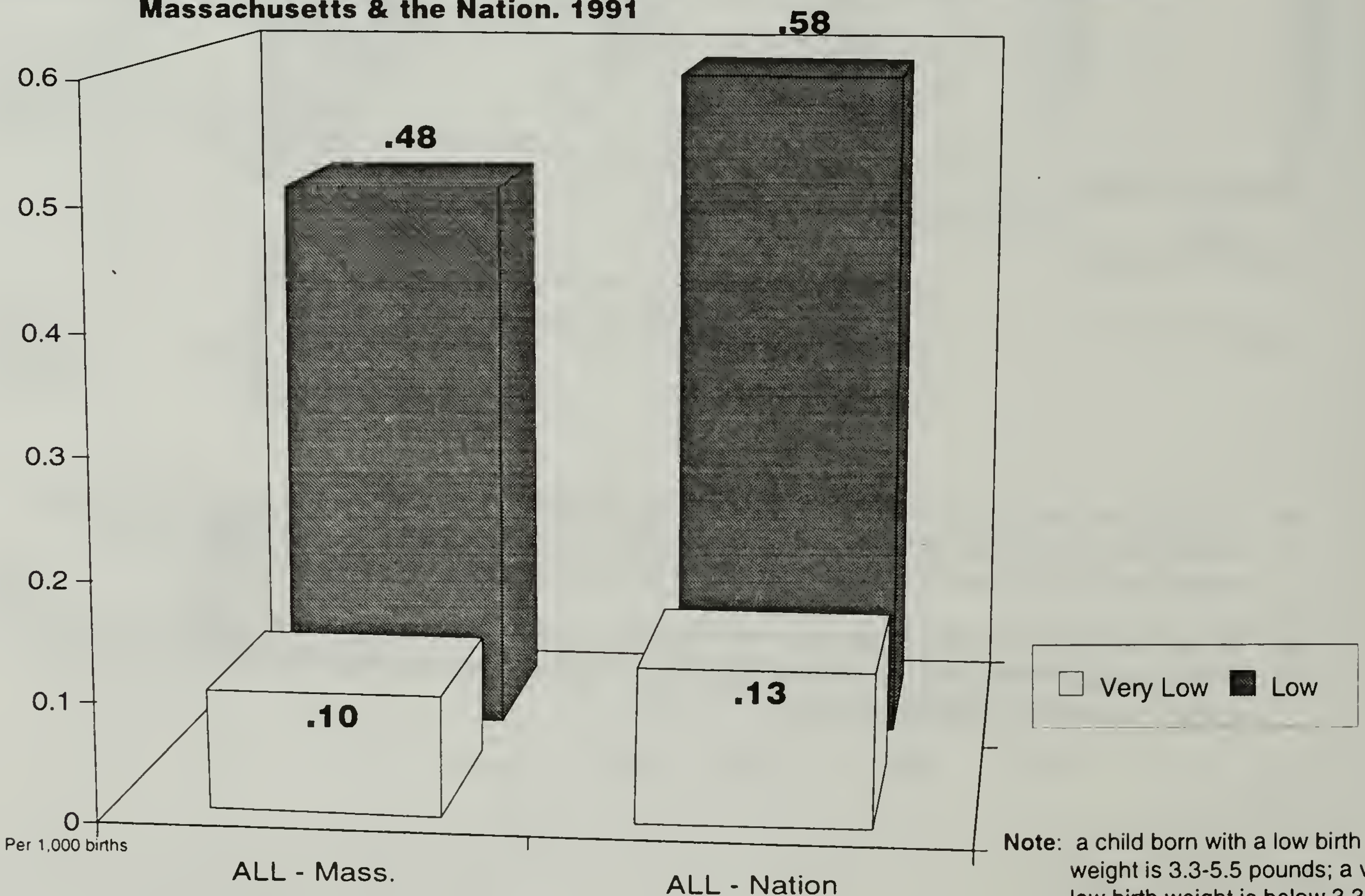
- In 1991, the rate of low births was 5.2% among white non-Hispanics.
- The rate of low births was 11.6% among black non-Hispanics, 7.2% among Hispanics and 6% among Asians.

These low-birth rates correspond generally with the incidence of pre-natal care discussed earlier.

Low birth weight rates vary considerably correspondingly by community, even when accounting for issues of ethnicity and poverty:

- As Table 1.1 indicates, there are significant differences in the birth weight of babies born in different Massachusetts cities.

**Chart 1.3. Comparison of rates per 1,000 births of low and very low birth weights: Massachusetts & the Nation. 1991**

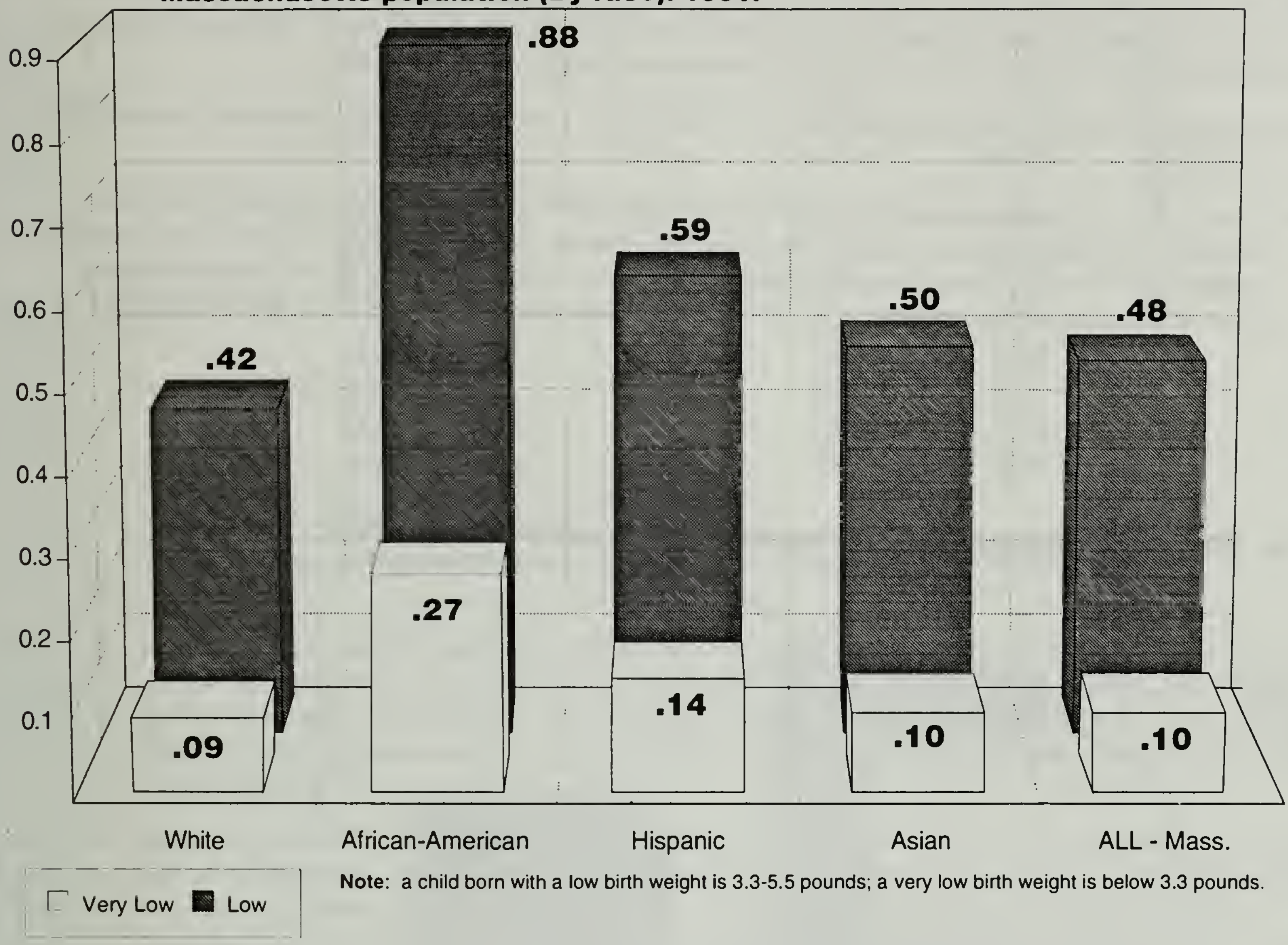


Source: *Massachusetts Bureau of Health*

**Note**: a child born with a low birth weight is 3.3-5.5 pounds; a very low birth weight is below 3.3 pounds.

## Direct Measure of Progress toward the National Education Goals: Children Born with Low Birth Weights

**Chart 1.4. Comparison of rates per 1,000 births of low & very low birth weights within Massachusetts population (By race). 1991.**



**Note:** a child born with a low birth weight is 3.3-5.5 pounds; a very low birth weight is below 3.3 pounds.

*Source: Massachusetts Bureau of Health*

### TABLE 1.1

*Birth Statistics of 12 Massachusetts Municipalities, 1991*

| City | Population | Mother's Race by % White | Black | Hispanic | Other | Unmarried Mothers % | (per 1000) | Adequate Care % | Low Birth weight % |
|---|---|---|---|---|---|---|---|---|---|
| Boston | 578,195 | 36.7 | 35.5 | 19.3 | 8.4 | 47.7 | 50.3 | 70.5 | 8.3 |
| Brockton | 92,096 | 59.6 | 19.1 | 8.7 | 8.4 | 42.5 | 64.9 | 63.0 | 7.8 |
| Cambridge | 95,464 | 57.3 | 19.2 | 9.7 | 12.8 | 22.8 | 19.8 | 79.9 | 7.0 |
| Fitchburg | 40,991 | 70.8 | 4.7 | 17.3 | 7.1 | 36.4 | 55.2 | 72.8 | 5.2 |
| Holyoke | 43,084 | 36.0 | 3.6 | 59.2 | 1.1 | 59.1 | 127.9 | 54.9 | 9.0 |
| Lawrence | 69,005 | 33.6 | 2.0 | 61.1 | 3.0 | 53.8 | 128.4 | 80.9 | 6.1 |
| Lowell | 102,914 | 59.3 | 3.1 | 16.4 | 21.2 | 41.3 | 72.1 | 71.6 | 7.3 |
| New Bedford | 99,192 | 73.3 | 5.3 | 13.8 | 7.5 | 42.9 | 80.0 | 69.9 | 5.6 |
| Pittsfield | 48,236 | 92.2 | 5.0 | 1.5 | 1.2 | 31.0 | 45.1 | 68.5 | 6.5 |
| Quincy | 85,370 | 81.6 | 3.1 | 2.3 | 12.8 | 19.4 | 24.7 | 84.7 | 5.4 |
| Springfield | 155,573 | 45.8 | 22.5 | 29.3 | 2.1 | 50.7 | 94.8 | 67.3 | 8.0 |
| Worcester | 168,659 | 66.7 | 7.4 | 18.8 | 6.7 | 39.2 | 57.7 | 83.2 | 7.0 |
| **STATE** | **6,038,645** | **77.7** | **7.7** | **9.6** | **4.8** | **25.9** | **33.4** | **81.5** | **5.9** |

*Source: Massachusetts Bureau of Health*

## Topic: Vaccinations

The vaccination rate among children is another indicator of the adequacy of health care being received by children in the Commonwealth. A child who is adequately immunized has had a number of encounters with the health care system and is more likely to have received adequate health care in general. Children who are inadequately immunized are less likely to be receiving sufficient health care.

- Massachusetts is one of only twelve states that offers a free universal immunization program to its citizens.
- Currently, the Massachusetts Immunization Project (MIP) distributes approximately 2.6 million doses of vaccines to 2,500 health care providers, free of charge. However, several factors may combine to limit the impact of state policy. The most critical factor may be the continued high level of immigration to the state and the corresponding pockets of under-immunized children.

**Chart 1.5. Vaccinations: Comparison of Massachusetts and the Nation.1991**

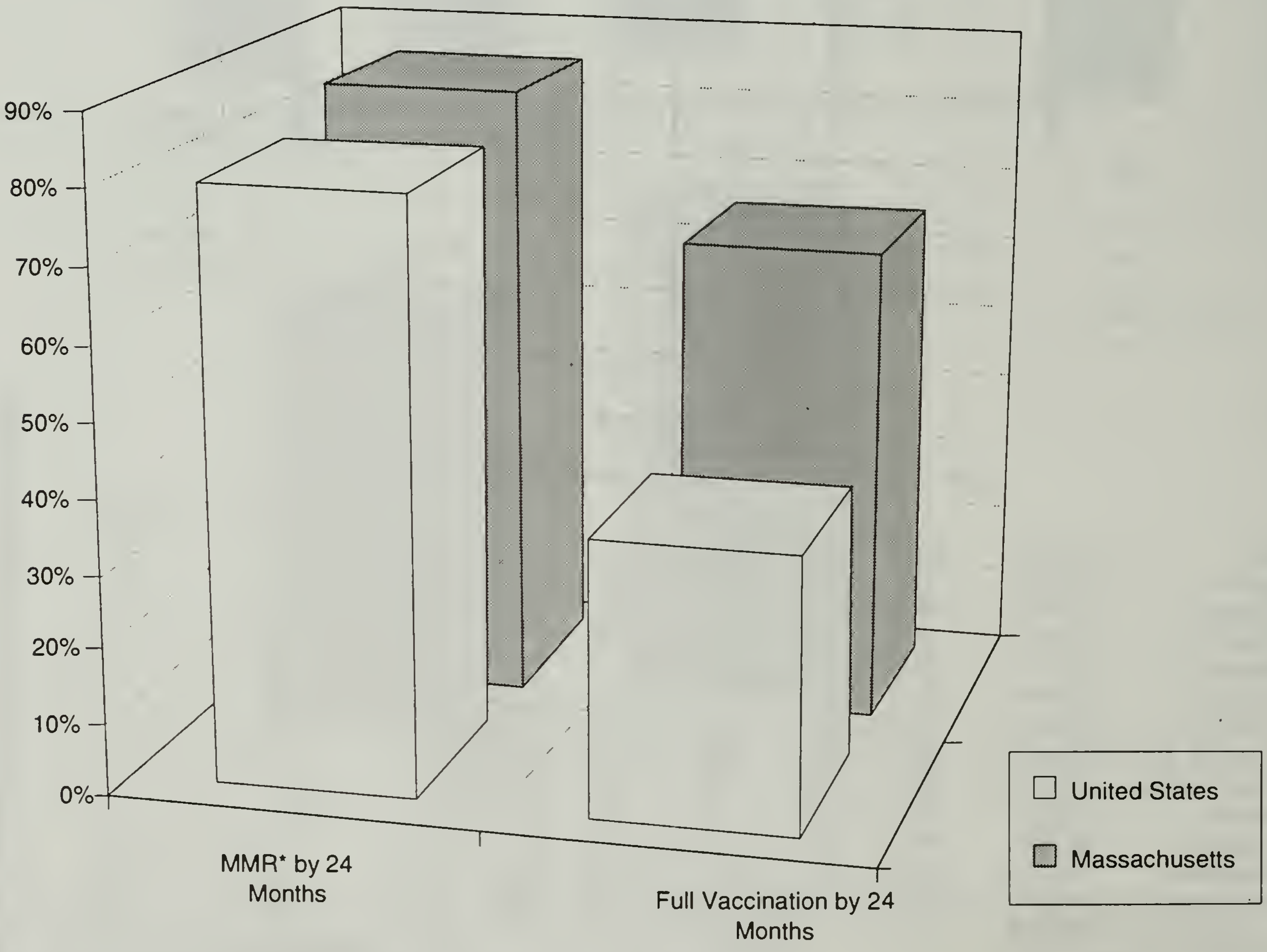


**Table 1.2**

| AREA | 1 Vaccination by 3 Months | MMR* 24 Months | Full by 24 Months |
|---|---|---|---|
| Boston | 74% | 78% | 58% |
| Holyoke | 64% | 70% | 38% |
| Lowell | 72% | 64% | 38% |
| Chelsea | 60% | 60% | 48% |
| New Bedford | 70% | 80% | 50% |
| Springfield | 74% | 83% | 58% |
| **Massachusetts** | **77%** | **85%** | **65%** |
| ***United States*** | | ***80%*** | ***37%*** |

*Source: Massachusetts Department of Public Health*
*National Education Goals Report*

- In 1992, The Massachusetts Immunization Project (MIP) conducted an immunization survey of 83,644 kindergarten children in 1,441 schools statewide. The survey revealed that 98% of the children were fully immunized. The high rate of full immunization is attributable to state regulations requiring immunizations for school entry and increased awareness among parents with school-age children.

- However, the MIP also conducted a retrospective survey of 3,303 records of children in 138 schools statewide. The survey revealed that at three months of age, 77% of the children had received age-appropriate immunization. At 12 months, the proportion increased to 85%. However, the proportion of fully-immunized children decreased to 65% by 24 months of age. However, even with 65% full vaccination at 24 months, Massachusetts is well above the national figure of 37%. The Massachusetts vaccination figures indicate that, while most children are receiving some basic health care at some point, a significant minority do not continue to receive care on a consistent basis.

- Massachusetts is a clear leader among states in the immunization of its citizens. Massachusetts was the first state in the nation to offer all recommended doses of all nine childhood vaccines to all providers free of charge.

- The benefits of this immunization program are tangible and immediate: Massachusetts experienced a two-thirds reduction in measles cases in 1989-90, while the nation was experiencing a measles epidemic.

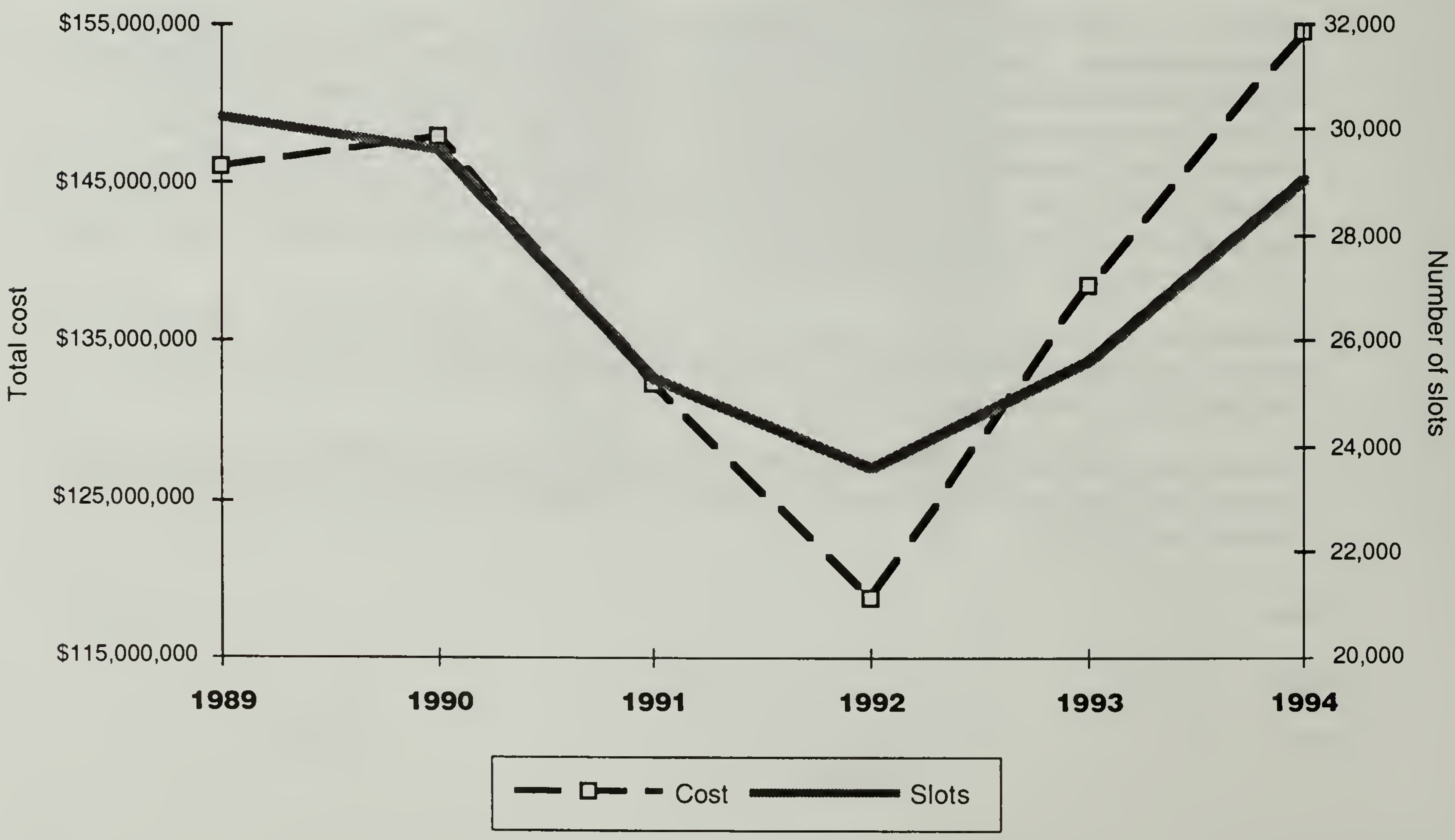
## Topic: Day-care & Early Childhood Education in Massachusetts

For single mothers or low-income families, who are attempting to escape poverty or dependency on welfare, access to subsidized day care is essential.

In Massachusetts, the delivery of subsidized day care has been consolidated and restructured under the authority of the Executive Office of Health and Human Services. Consolidation has allowed better coordination between day care providers who contract with the state and those which accept day care vouchers. In addition, consolidation assures even distribution of day care resources to targeted groups and geographic regions.

The Commonwealth has two methods of subsidizing child care: contracted care and voucher care. Both types of care require the family to contribute on a sliding-fee scale towards payment of total costs. Contracted care is offered to children by licensed providers who are paid an established daily rate according to contracts held with the Department of Social Services (D.S.S.). Contracted care is available to low income families on a sliding fee basis. For example, a family of three with a gross monthly income that is 50% of the State Median Average for a three person family ($1,764-$1,931), would contribute $10.40 as a daily fee toward the total cost of the care. Contracted care is also available to children suffering abuse and to children with special needs. Voucher child care allows families the opportunity to choose child care utilizing Child Care Resource Agencies that are located at thirteen different sites statewide. Children of parents who are qualified current or recent participants in the MassJobs program are eligible to receive vouchers. Families eligible for low income Contracted child care are eligible to choose Income Eligible Vouchers as an alternative to Contracted care. Since vouchers allow parents to decide what day care is best for their children, the E.O.H.H.S. strongly supports a greater shift toward a voucher system as a means of empowering families.

**Chart 1.6. Day care slots and costs in Massachusetts: FY89-FY94**



## Early Childhood Education

In 1991, the Children s Defense Fund surveyed state funding trends in provision of child care and early childhood education. The study found that Massachusetts ranked first among all states in per child funding for early care and education. Not including federally mandated state spending, Massachusetts spent $152.04 per child under age fourteen in FY 1990. Other states lagged far behind. It should be noted, that as many as twenty states do not fund preschool programs at all. Several states that do fund early childhood education, do so through Head Start only. More often, early childhood programs in states are funded through a mix of programs.

Massachusetts has a mixture of publicly funded early education programs. In 1985, Massachusetts initiated a state subsidized public school preschool program (Chapter 188). Each school district s preschool program varies, but Chapter 188 specifies that no preschool class will number over 15 children per classroom. Chapter 188 funds both preschool programs and kindergarten enhancement programs. In FY 92, Chapter 188 was funded at $6.9 million. Approximately 4,000 preschool children were served through Chapter 188 in FY 92. About 8,000 kindergartners benefited from Chapter 188 enhancement grants. The federally funded Head Start program serves approximately 30-35% of eligible three and four year olds in the state. In FY 92, over 10,000 children were served by Head Start (including more than over 450 state funded Head Start slots).

Other publicly-funded preschool programs in Massachusetts include: programs for children with special needs (funded through federal special education funding), Chapter 1 early childhood programs (federally funded programs such as Even Start), bilingual programs funded through Title VII, and locally funded preschool programs. Since the mid-1970s, state law has mandated public schools serve three and four year olds with special needs.

The Education Reform Act of 1993 also addressed the on-going need for early childhood education by establishing a commission to address the myraid of certification, availability of quality services and funding issues which are incorporated in any early childhood initiative. The commission's report is due at the end of 1994.

*GOAL*

# 2

# Higher Completion Rates for High School and College Students

A common sense goal for an educational system is the successful completion of the program by a student. The issue of completion -- or drop-outs -- is a complex one. For the K-12 system, issues for students may become apparent as early as third or fourth grade. Too often, a sense of little connection between the school and student accelerates through the middle school years and results in increased truancy -- and eventually a drop-out.

The loss of students who drop out and fail to complete an educational program is a lost opportunity to the individual and a cost to our society. The story on drop-outs, based on research is staggering -- and depressing. Crime, substance abuse, and single parenthood all have linkages with the failure to complete a high school program and the data on salaries earned over a lifetime should provide a compelling argument for an individual to complete high school.

In Massachusetts, we have a relatively low annual drop-out rate of 4.3%. When one factors in those students who return to school in the fall, the actual rate is further reduced to 3.4%

However, there is a large disparity in the drop-out rates for students of different race or ethnicity. Hispanic students have a drop-out rate nearly four times the state average, while African American students have a drop-out rate which is more than double the average. As Hispanic students are an ever-incresaing part of the student population, the issue of Hispanic drop-outs is a particularly disturbing one.

### Higher Education

The issue of completion by students is not limited simply to the K-12 system. The state colleges and UMass system should also be held accountable for the students who are admitted to their programs. Too many of the students in the colleges and university system are enrolled in remedial educational programs. It appears from the the relatively low return rate of second-year students, and the low completion rate of students within six years of admission, that too many of these students are simply not prepared for college-level work. Far too often, these students simply withdraw after a year or two and do not complete their higher education program, after paying significant sums from savings and student loans to these public higher education institutions.

It can be anticipated that future *Condition* reports will have more detailed data on the issues of completion rates for public higher education.

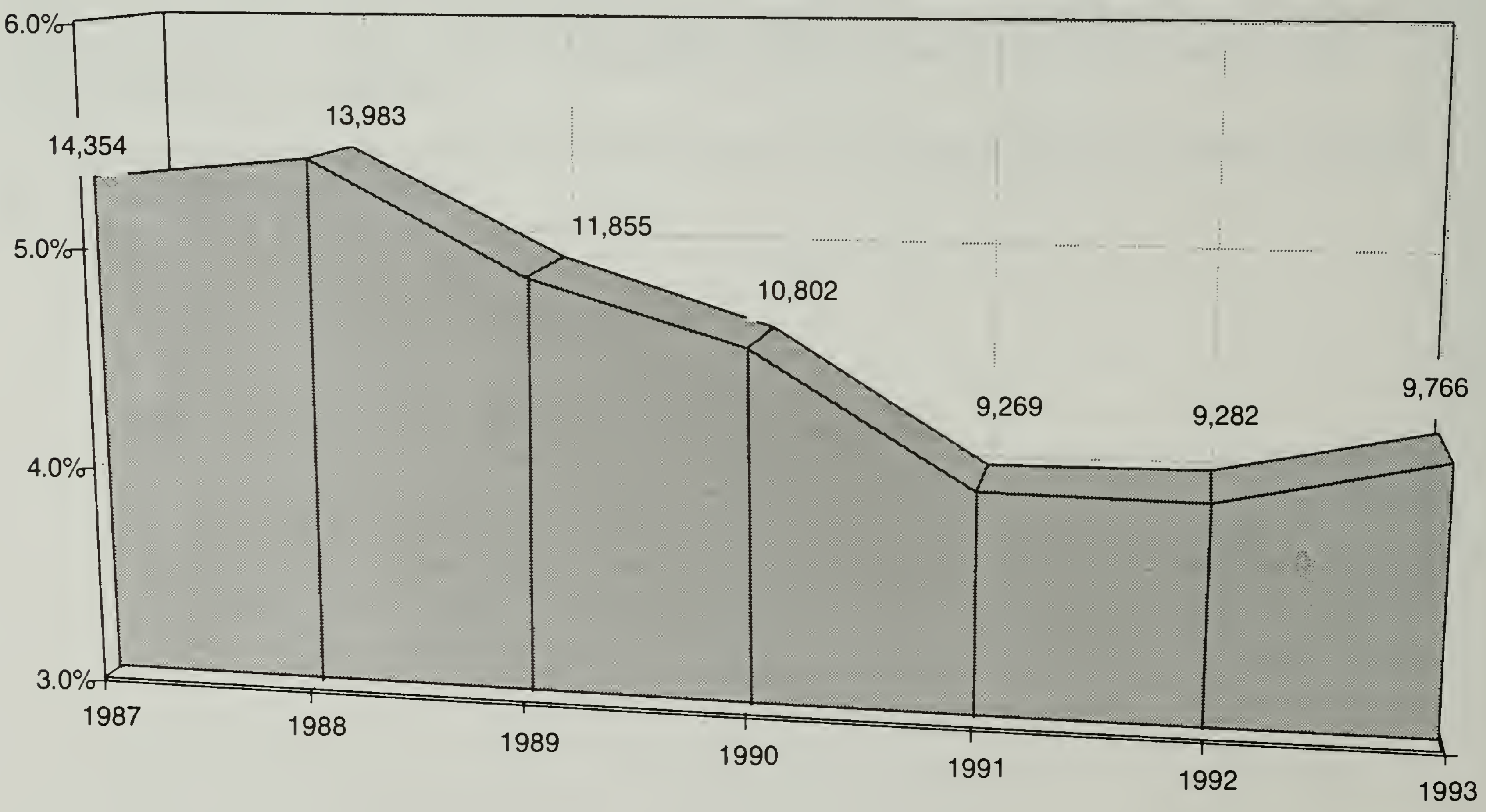
## Topic: Drop-out trends - annual rate

For Massachusetts to remain economically competitive into the 21st century, its workforce needs to be well-educated. In the meantime, Massachusetts faces the stark reality that 4.2% of Bay State high school students dropped out of school in 1993. That percentage translates into more than 9,700 young men and women who are less able when attempting to enter the workforce and more likely to be in need of public assistance. For example, nationally, 23.1% of high school drop-outs were unemployed in 1991, compared to 9.4% of high school graduates.

While the 4.2% annual drop out rate is significant, it does represent a continuing reduction in the drop-out rate. Since 1988, the drop-out rate in Massachusetts has dropped by 1.2% -- a decline of almost 28%. Further, under the new data gathered by the Department of Education, when one factors in students who dropped-out one year -- but returned the next fall -- the actual drop-out rate is 3.4%.

This decline has occurred at the same time the funding for drop-out prevention programs has also declined. If the problem for at-risk students is a lack of any real connection with the school and its educational program, then the fundamental question for state and local policymakers is whether the strategies for addressing the issue of drop-outs is best addressed through add-on programs -- which may further segregate these students from the mainstream student population -- or through a fundamental restructuring of the school to focus the school on the relationship between the student and the school.

**Chart 2.1. Trends in annual drop-out rate and unemployment rate: 1987-1993**
***Note: The numbers on the chart reflect the actual number of drop-outs.***



*Source: Massachusetts Department of Education*

## Direct Measure of Progress toward the National Education Goals: Drop-out Rates

As noted in Table 2.1, there are differences in the drop-out rates between male and female students over the years. Interestingly, the drop-out rates for female students declined over the years 1987-1992, while the rate for male students fluctuated in the same time period.

Furthermore, while the highest drop-out rate continues to be in urban school districts, the urban districts have also demonstrated the greatest improvement in drop-out rates over the years, from 8.9% in 1987 to 6.6% in 1992.

### TABLE 2.1

*Massachusetts Drop-out Statistics, 1987-1992*

| | **1987** | **1988** | **1989** | **1990** | **1991** | **1992** |
|---|---|---|---|---|---|---|
| Total Drop-out Rate, Grades 9-12 | 5.3% | 5.4% | 4.9% | 4.6% | 4.0% | 4.0% |
| Total Number of Drop-outs | 14,354 | 13,983 | 11,855 | 10,802 | 9,269 | 9,282 |
| Grade 9-12 Enrollment | 268,180 | 258,546 | 242,748 | 235,350 | 230,069 | 230,170 |
| **Annual Drop-out Rates** | | | | | | |
| **By Grade** | | | | | | |
| Grade 9 | 5.0% | 5.0% | 4.4% | 4.0% | 3.5% | 3.7% |
| Grade 10 | 6.1% | 6.5% | 5.8% | 5.3% | 4.7% | 4.7% |
| Grade 11 | 5.9% | 6.1% | 5.7% | 5.5% | 4.5% | 4.6% |
| Grade 12 | 4.1% | 3.8% | 3.6% | 3.5% | 3.3% | 3.1% |
| **By Gender** | | | | | | |
| Male | 5.8% | 6.2% | 5.3% | 5.2% | 4.4% | 4.5% |
| Female | 4.8% | 4.6% | 4.5% | 4.0% | 3.5% | 3.5% |
| **By Race/Ethnic Group** | | | | | | |
| African American | 10.6% | 10.6% | 9.2% | 9.0% | 8.1% | 7.4% |
| Asian | 6.3% | 4.8% | 4.7% | 5.1% | 3.9% | 4.2% |
| Hispanic | 15.2% | 14.4% | 14.1% | 12.6% | 11.1% | 11.1% |
| White | 4.4% | 4.5% | 4.0% | 3.6% | 3.0% | 3.1% |
| **By Kind of Community** | | | | | | |
| Urban Centers | | 8.9% | 8.0% | 7.7% | 6.9% | 6.6% |
| Economically Developed Suburbs | | 2.6% | 2.3% | 2.0% | 1.6% | 1.8% |
| Growth Communities | | 4.3% | 3.9% | 3.5% | 2.7% | 3.1% |
| Residential Suburbs | | 1.4% | 1.3% | 1.1% | 0.7% | 0.9% |
| Rural Economic Centers | | 4.4% | 3.9% | 3.3% | 2.9% | 3.1% |
| Small Economic Centers | | 3.5% | 3.5% | 2.9% | 2.0% | 2.5% |
| Resort/Retirement/Artistic | | 2.9% | 2.0% | 2.4% | 1.9% | 1.7% |

Source: Massachusetts Department of Education

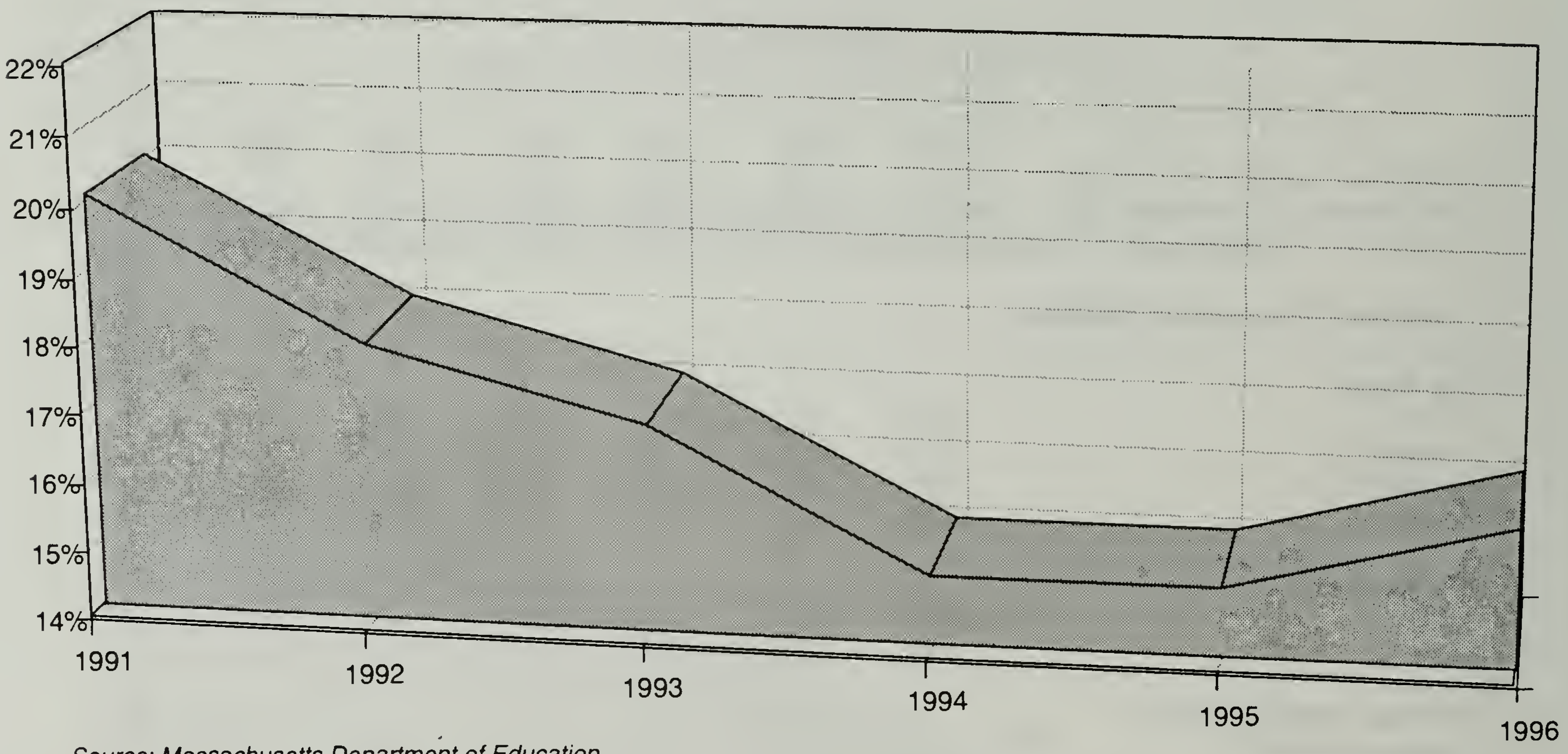
A breakdown of the 1993 drop-out data was not available at time of publication.

### Topic: Drop-out trends - 4 year rate and drop-out by race/ethnicity

The annual drop-out rate obviously results in a culmulative effect over a four-year period. This four-year drop-out rate reflects more accurately the impact on a particular school class.

The projected four-year drop-out rates in Massachusetts show a reduction from 20% for the Class of 1991 to 15% for the Class of 1994. These figures generally follow the trend of the reduced annual drop-out rate. If Massachusetts is to meet the target of 90% completion by the year 2000, there is still work to be done.

**Chart 2.2. Actual and projected trends in 4-year drop-out rate: 1991-96**



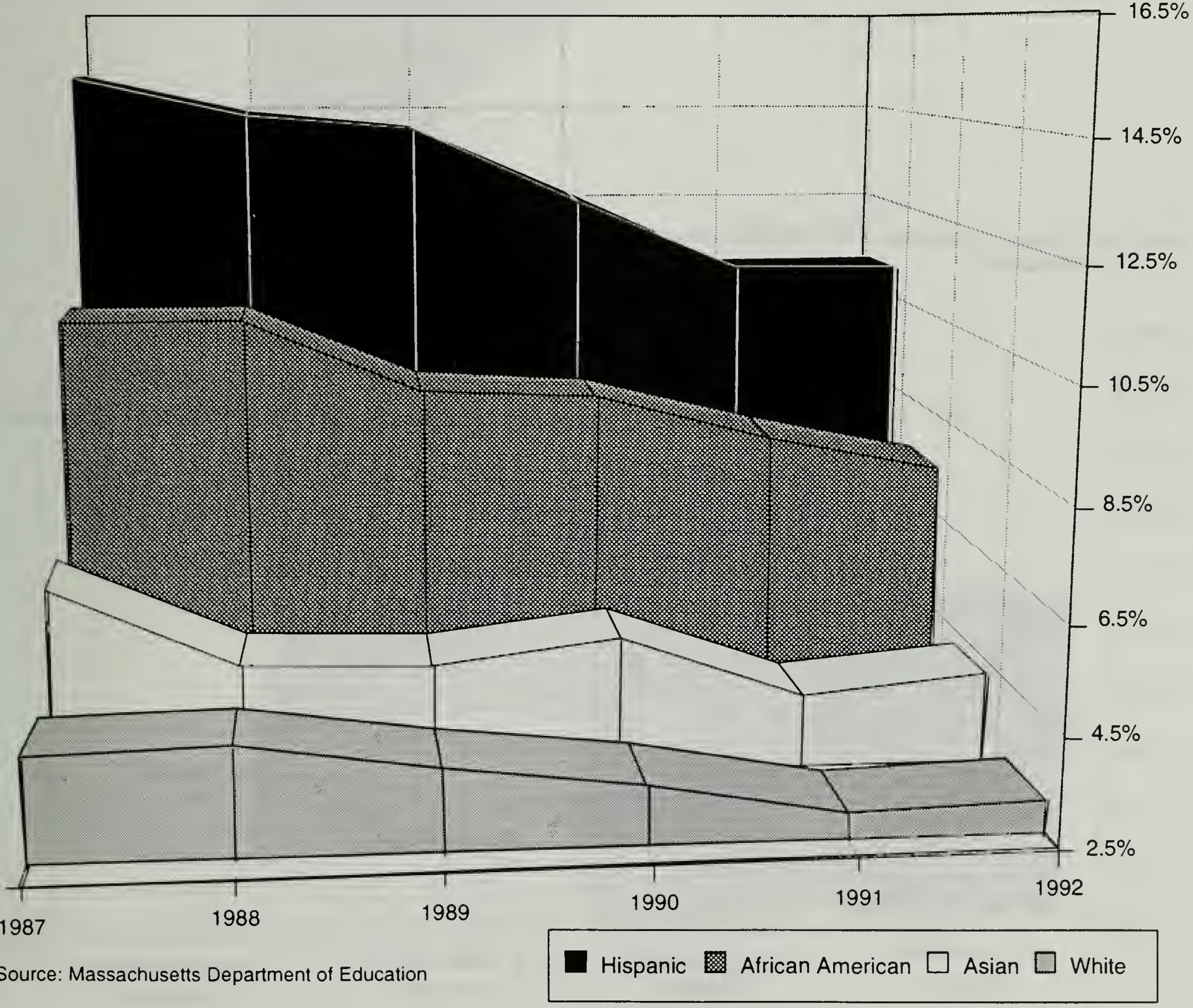
*Source: Massachusetts Department of Education*

## Direct Measure of Progress toward the National Education Goals: 90% Completion Rate by 2000

As noted in Table 2.1 earlier, there are differences in the drop-out rates for gender classifications and type of community. In addition, there are significant differences in drop-out rates when comparing the race and ethnicity of students.

However, there are improvements. The gap between the drop-out rates for minorities and those of white students has decreased. While the drop-out rate among white students declined by 1.4% between 1987 and 1991, the drop-out rate among Hispanic students declined by 4.1%, African-Americans by 2.4%, Asians by 2.4% and Native Americans by 2.1%.

**Chart 2.3. Differences in drop-out rate by race and ethnicity: 1987-92**



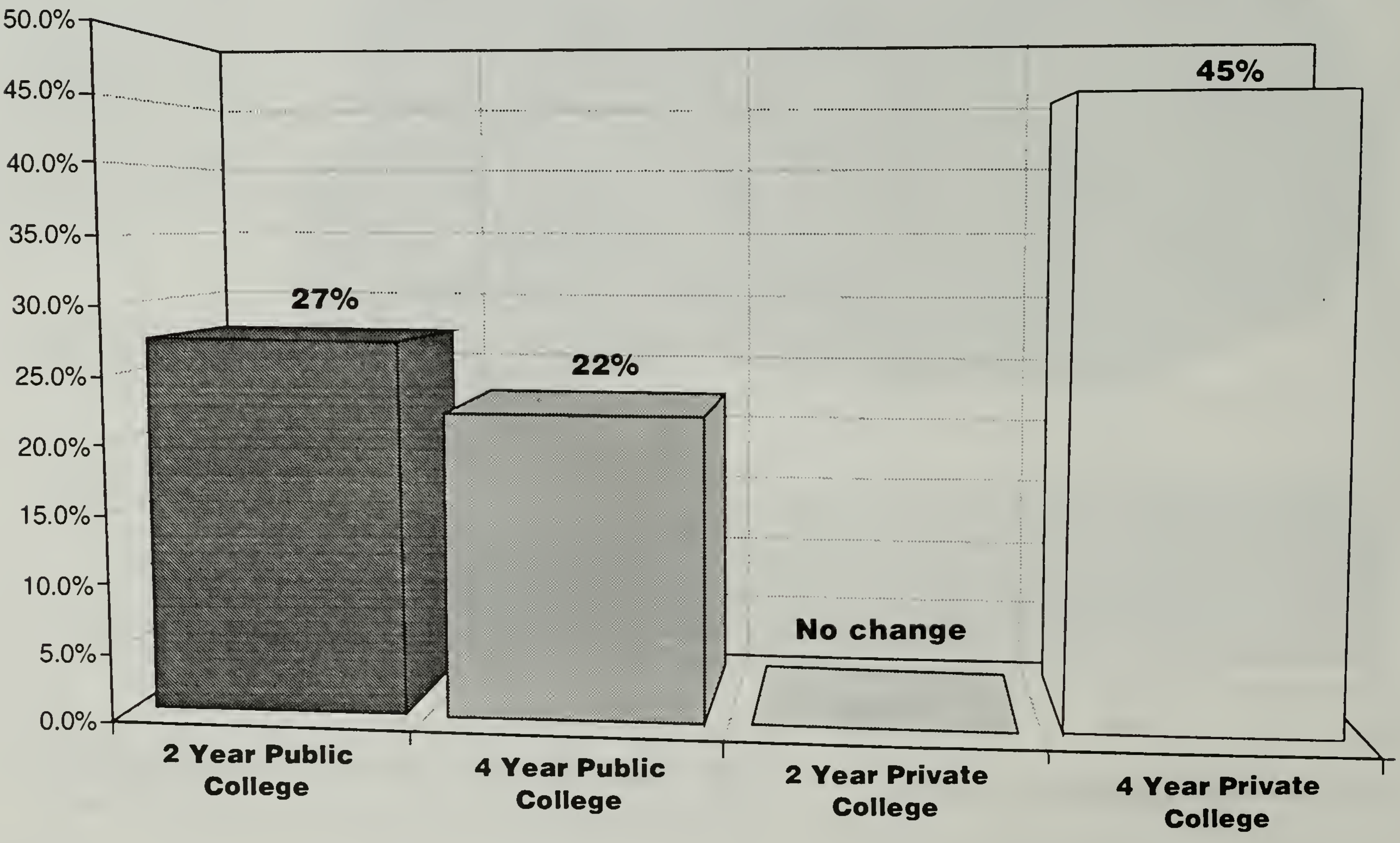
Source: Massachusetts Department of Education

### Topic: Post-graduate plans of high school students: 1983-93

Massachusetts high school students and their parents have established high expectations for themselves. In 1993, for the first time ever, more than half of the graduates stated that they intended to pursue further education in a four-year college program. This 51% of the graduates represents a significant increase from the Class of 1983, where 38% of the graduates stated a plan for a four-year college program.

Obviously, some of the change in plans of high school graduates may be attributed to a change in economic conditions and the increasing recognition that an advanced education may make the graduate more competitive in the job market. However, the intriguing aspect of this commitment toward an advanced educational degree is that the more significant growth has been toward four-year *private* colleges. Given the substantial difference in tuition between public and private colleges, this trend toward the more expensive private college programs is notable.

**Chart 2.5. Growth in choice for higher education by Massachusetts high school graduates. 1983-93**



## Additional Important Information to Evaluate Improvement in Education: Post-Graduate Plans of High School Graduates

**Chart 2.6. Post-graduate choices by Massachusetts high school graduates. 1983**

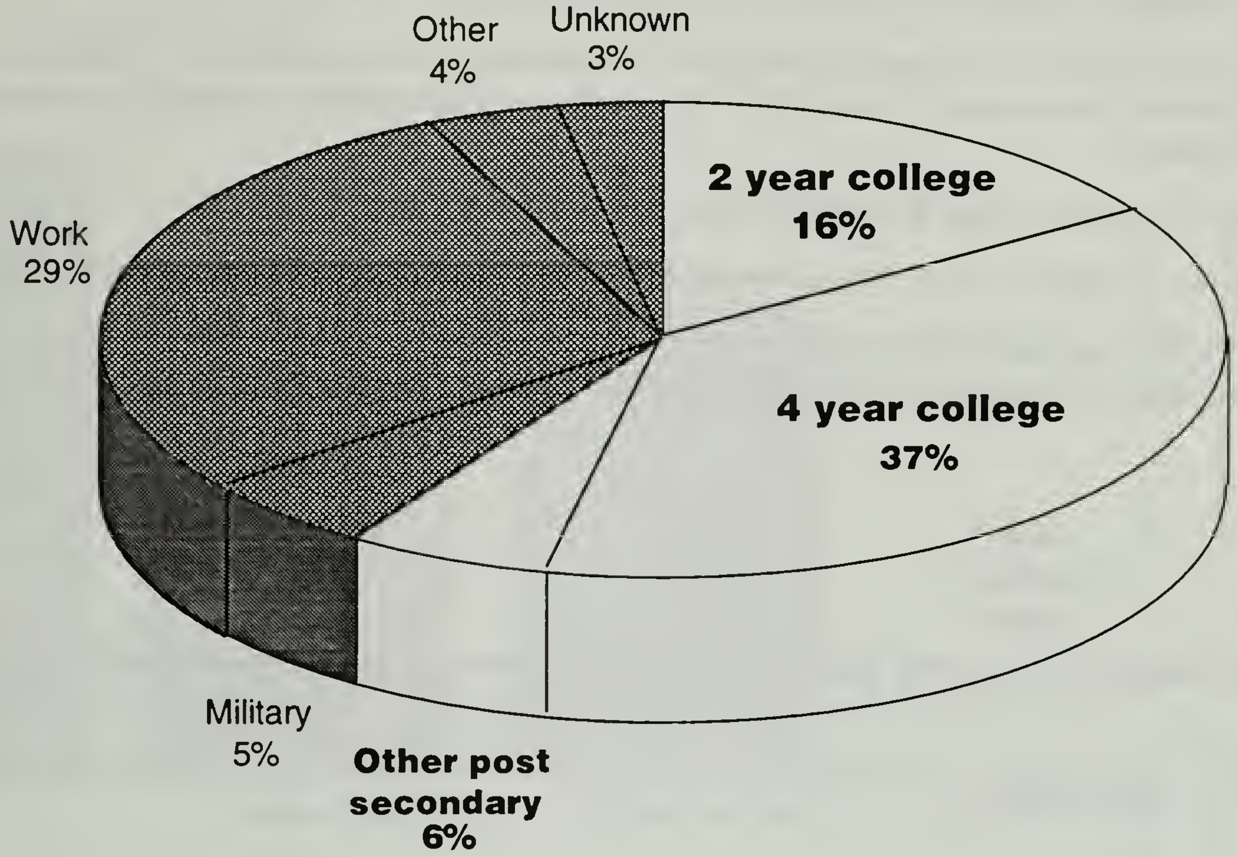
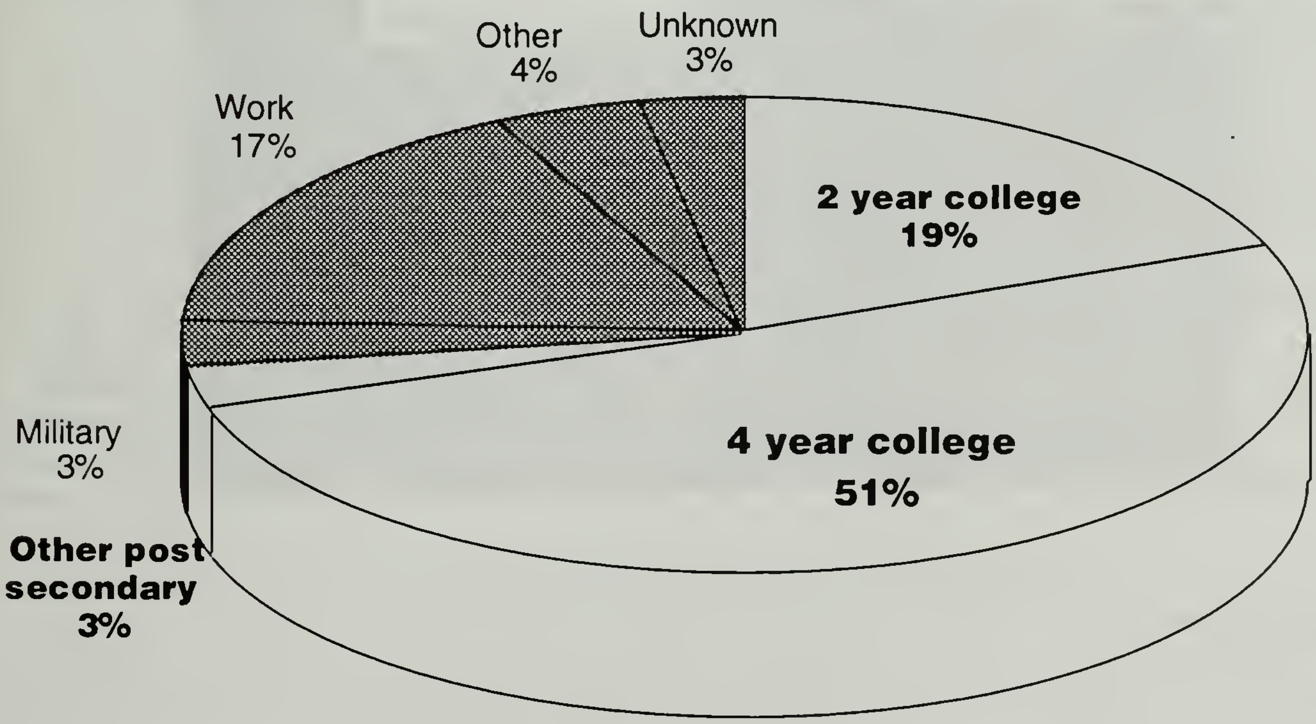


**Chart 2.7. Post-graduate choices by Massachusetts high school graduates. 1993**



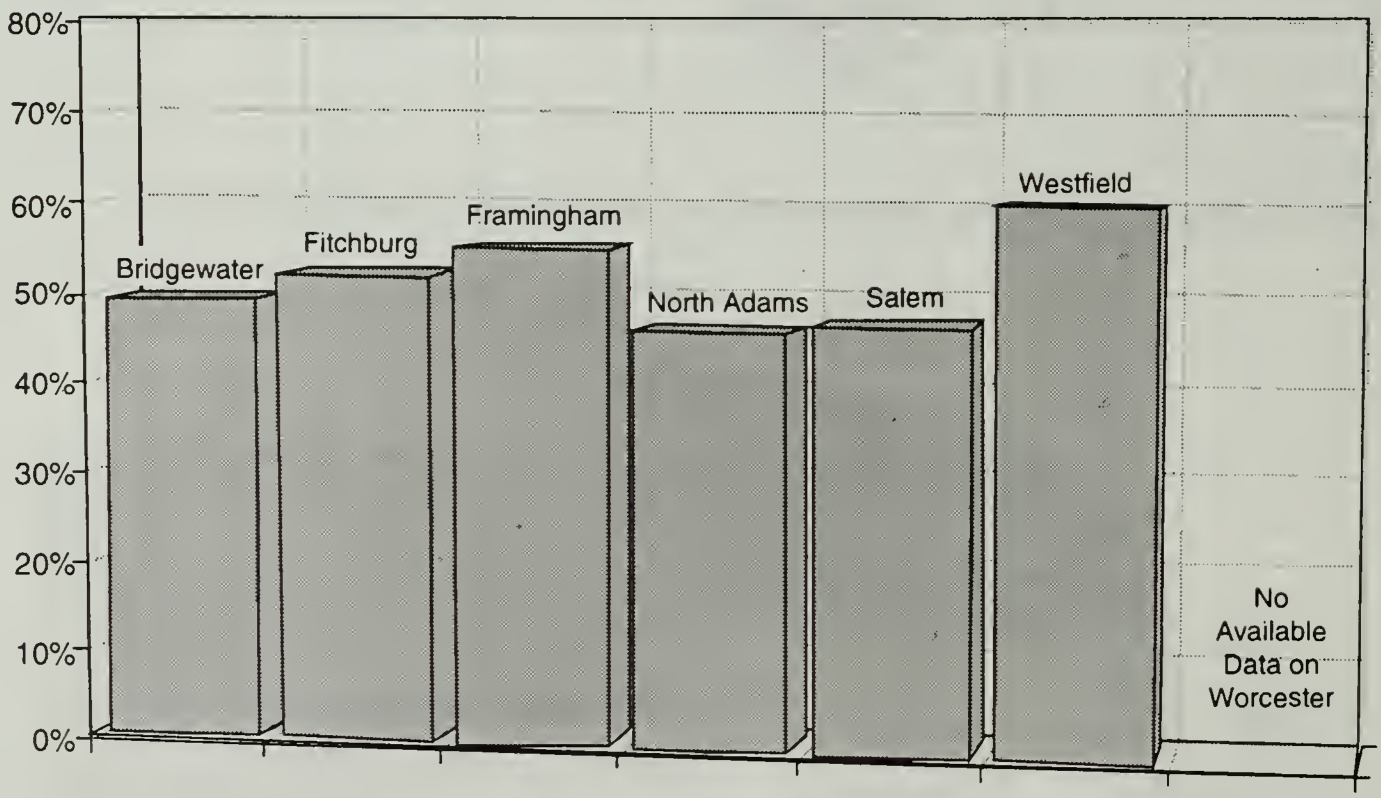
## Topic: Completion rates for public higher education students

As noted earlier in this report, over 50% of the high school graduates are now going on to post-secondary education. This is clearly an indication of the high value placed on education and the equally high expectations of parents and students. As nearly a quarter of the high school graduates plan to enroll in a public college or UMass, it is important that the public higher education system be admitting students who are prepared for college-level work, and not simply because there is space available.

One indicator which can be used to ascertain the adequacy of the preparation of students as well as the commitment of the college or university to the student is the completion rate of the students within six years of admission.

- The completion rate of state colleges varies within a range of 45-60%.
- The completion rate for the undergraduate UMass campuses varies between 35-70%.
- Another indicator is the rate in which students return for their second year of education. Although not all campuses reported this data, generally about 65-85% of the students return.

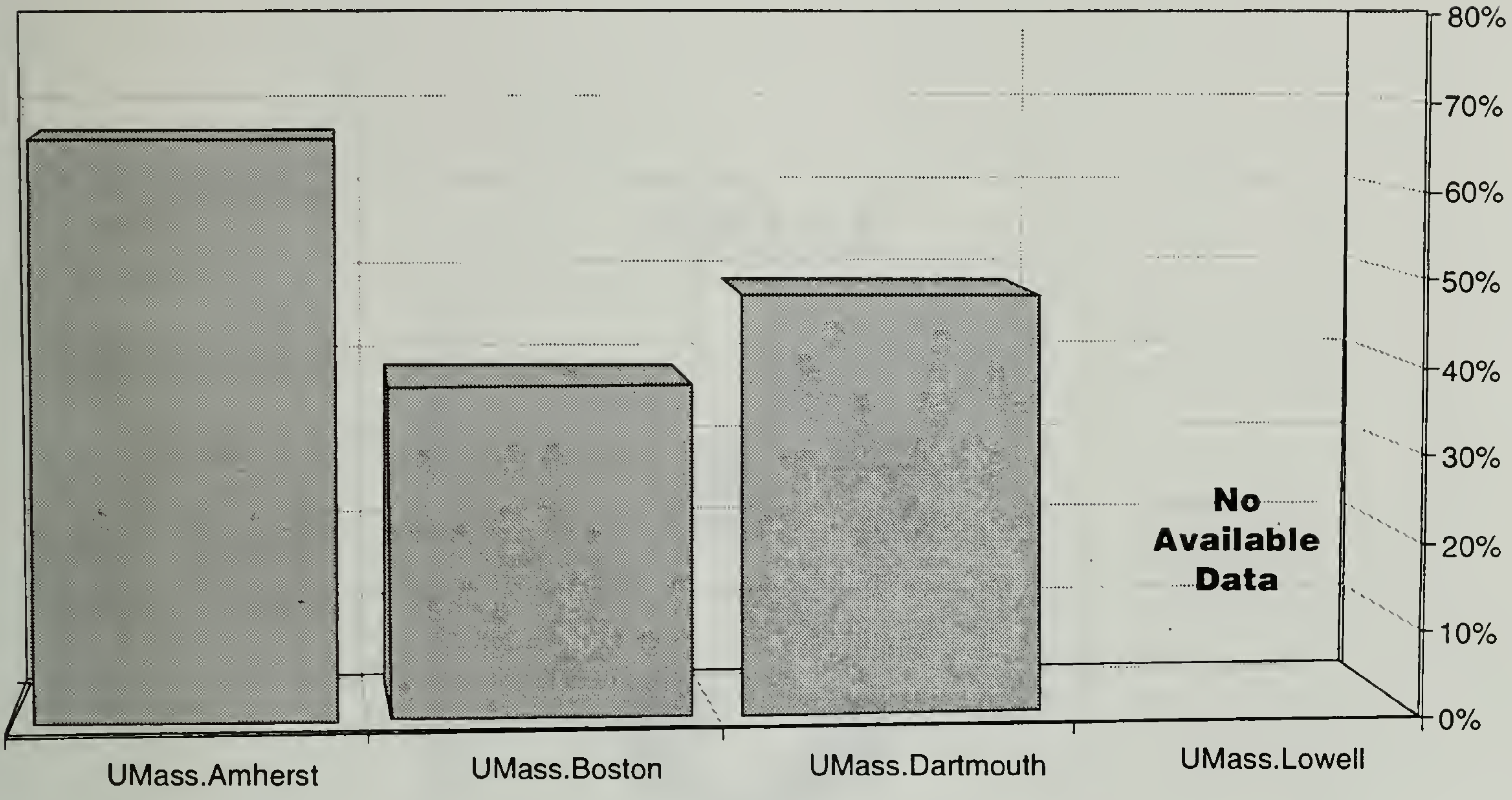
**Chart 2.8. Completion rate for state college undergraduate students within 6 years.**



Source: Multiple sources

## A Direct Measure of the Goal: Completion Rate of Undergraduates in Public Colleges and the University of Massachusetts

**Chart 2.9. Completion rate for UMass undergraduate students within 6 years.**



Source: Multiple sources

# *GOAL*

# 3

## Students Focused on High Achievement for the 21st Century

Massachusetts has a long tradition of educational leadership in the nation and the world. Massachusetts retains among its many treasures, its colleges and universities. The best students from around the world are drawn to Massachusetts because of its institutes of higher learning. Massachusetts seeks to assure that the very best students attending its colleges and universities are from Massachusetts itself.

Since 1992, Massachusetts has participated in the National Assessment of Educational Progress [NAEP] which allows comparisons between Massachusetts students and students in other states. Further, NAEP has released data which shows Massachusetts students tend to do well on performance comparisons with students in the other states. Indeed, Massachusetts ranked first in elementary school academic performance on a 1993 NAEP proficiency exam in reading.

However, in order to be ready for the challenges of making Massachusetts a world class economic force, its students must achieve on a world class level. Undoubtedly, the best students in Massachusetts can compete with their foreign counterparts.

Comparisons of academic performance between U.S. elementary and secondary students, and their international counterparts show that American students are not world leaders. American students are in back of the students in most countries in the modernized world. This national goal seeks to raise the competency of America's students in the basic school subjects.

The performance of Massachusetts students in fourth, eighth and twelfth grades has been assessed every other year since 1988. Compared with results from the two earlier statewide testings carried out in 1988 and 1990, the average scores of students in 1992 rose particularly at the fourth- and eighth-grade levels. The present assessment indicates improvement in overall achievement among all grade levels.

A feature of the 1992 MEAP testing is the compilation of results into four proficiency levels in order to assess whether students could actually *use* the knowledge which had been taught to them in school. Using standards established by curriculum advisory panels of educators, analysts declared that proficiency at levels III and IV would constitute strong command of grade-level subject matter and cognitive learning. The findings of this analysis led to the conclusion noted earlier that only about one quarter of Massachusetts students demonstrated strong performance on grade level basis. The Department of Education printed the results by proficiency levels for each of the school districts of the Commonwealth. No districts — not even those with families of the highest median income and highest parental educational attainments — scored consistently above the 50% level when level III and IV scores are aggregated. Thus even the wealthiest and best-educated communities are not achieving high performance. The findings of all other school districts is similar. There is room for much improvement if we have as a goal the attainment of a strong proficiency by a significantly high number of students in the Commonwealth.

### Overall assessment - 1992 MEAP

The results of an analysis of the 1992 MEAP assessment by proficiency levels showed that only one in four Massachusetts students demonstrated that they can apply their learning and have a firm grasp of knowledge of the basic subjects. In contrast, two-thirds find difficulty in applying the knowledge and skills they learn in the classroom; an average of 10% of students can be classified as failing to achieve a level of basic competency.

### Race/Ethnicity

There are significant differences in the proficiency scores of students when the race and ethnicity of the students are considered. However, as African-American and Hispanic students tend to reside in more urban districts — which historically have not had the same resources as wealthier districts — it is not possible to define precisely *why* such differences in achievement occur.

## Gender

- At the eighth grade level, there appear to be significant differences in attainment between boys and girls at the higher levels of proficiency. Generally, boys outperfrom girls in math, science -- and social studies. Girls outperform boys in reading. At level IV, the highest of the proficiency levels, the difference favoring boys in science is 32%, and in social studies 23%.
- The difference in attainment between boys and girls increases by twelfth grade. Twenty-two percent more boys than girls are reading below level I. At the other end of the spectrum, there are 27% more boys at level IV in mathematics, 26% in science and 20% in social studies.
- The gender differences in math and science have been well discussed. The issue of social studies is less well discussed but more disturbing in some ways. As the skills needed to comprehend social studies are essentially the same as reading and writing, one might expect girls to do well. It may be that the material or how the subject matter is presented are the key issues. As noted later in this report, the percentage of social studies teachers who are male in high school out-number female social studies teachers by about 3-to-1.

## Advanced Placement examinations

An indicator of high level student performance is the degree to which Massachusetts students take and pass Advanced Placement (AP) Tests which earn college credit and advanced study in college for the students. In summary, a greater percentage of Massachusetts high school students take the AP exams, and a higher percentage of students obtain a 3 or 4 grade on the exam than do their national peers. There are, however, some early signals of difficulties in foreign languages and fine arts which bear watching.

## Topic: The Massachusetts Educational Assessment Program [MEAP]

The Department of Education's Massachusetts Educational Assessment Program (MEAP) was established in 1985 for the purpose of providing measurements of students' proficiencies for comparison between schools, and districts.

Since 1988, Massachusetts students have been assessed by MEAP at grades four, eight, and twelve. In 1992, as reported in D.O.E.'s 1992 MEAP summary, the MEAP program evaluated the responses of over 155,000 students statewide. In evaluating student achievement, MEAP used two different types of statistics. "Scaled scores" are results from different assessments applied to a common scale. Because scaled scores have been calculated since 1988, it is possible to measure the progress of students in 1990 and 1992, subsequent years in which the MEAP assessment was conducted.

In 1988, the statewide average scaled MEAP score was 1300. Individual schools and districts had scores ranging from 1000 to 1600. MEAP results for 1992 reveal an improvement in student achievement. In 1992, fourth graders averaged 1330 in all subjects. Average eighth-grade scores ranged from 1320 in Social Studies to 1340 in Science. However, for grade twelve examinees, scores ranged from 1310 in Social Studies to 1320 for all other subjects. While this was an improvement over 1988 results, improvement in scores for high school seniors lagged behind that of the other two grades.

In 1992, MEAP assessments were extended to include the most extensive use of open-ended questions in each subject area to date. While the assessment still includes multiple-choice questions, the inclusion of a large number of open-ended questions is designed to better measure student understanding of mathematics, science, social studies, writing, and reading. Student responses are evaluated using five proficiency standards. In Chart 3.1, MEAP "level of proficiency" results are presented. As the graph indicates, proficiency results for Massachusetts students present a more complicated and disturbing picture than do the reported scaled MEAP scores. That such a large proportion of students are assessed at such low proficiency levels presents a disturbing -- but realistic -- picture of student achievement to all parents, policymakers and educators in Massachusetts.

### MEAP Proficiency Levels

**Below Level 1** - Students at this level were able to respond to very few multiple choice questions, and were unable to interpret or respond to open-ended questions.

**Level 1** - Students at this level are sometimes referred to as novice learners. They are capable of responding to simple, familiar material that is presented in a highly-structured way (i.e. multiple-choice), but fail to understand unfamiliar tasks.

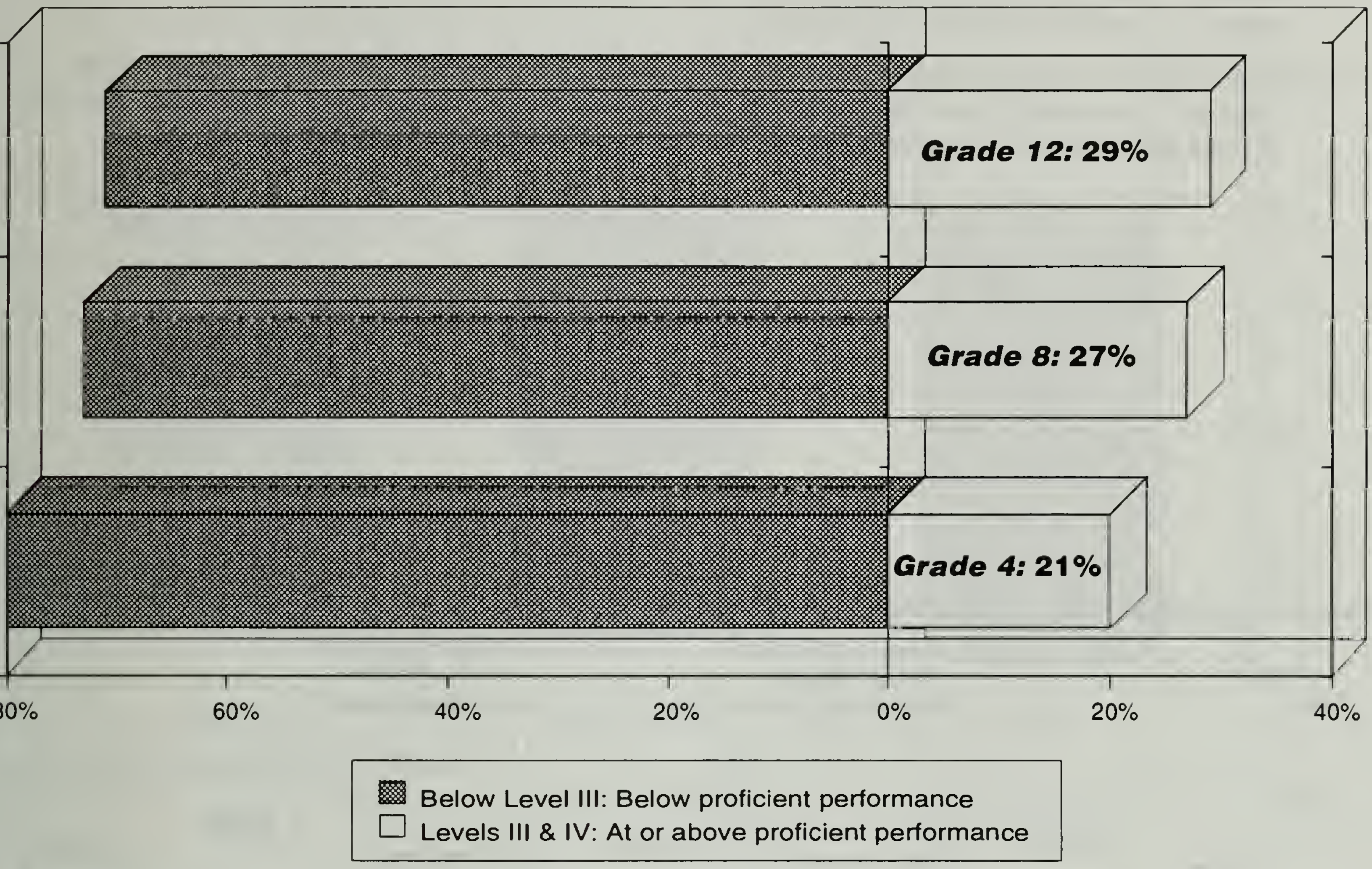
**Level 2** - Students have mastered the basic components of grade-appropriate material. Level 2 students respond adequately to structured questions, but have difficulty going beyond the minimally acceptable, and may indicate major misconceptions.

**Level 3** - Students have mastered the underlying principles of grade-appropriate curriculum, can communicate clearly, and apply their knowledge in a variety of contexts.

**Level 4** - Students possess a broad and detailed base of knowledge that goes beyond traditional curriculum. Level 4 students have analytical and communication abilities that are sophisticated for their age level.

## Additional Important Information to Evaluate Improvement in Education: MEAP Proficiency Scores

**Chart 3.1. Proficiency scores for Grade 4, 8 and 12: 1992 MEAP results**



*Source: Massachusetts Department of Education*

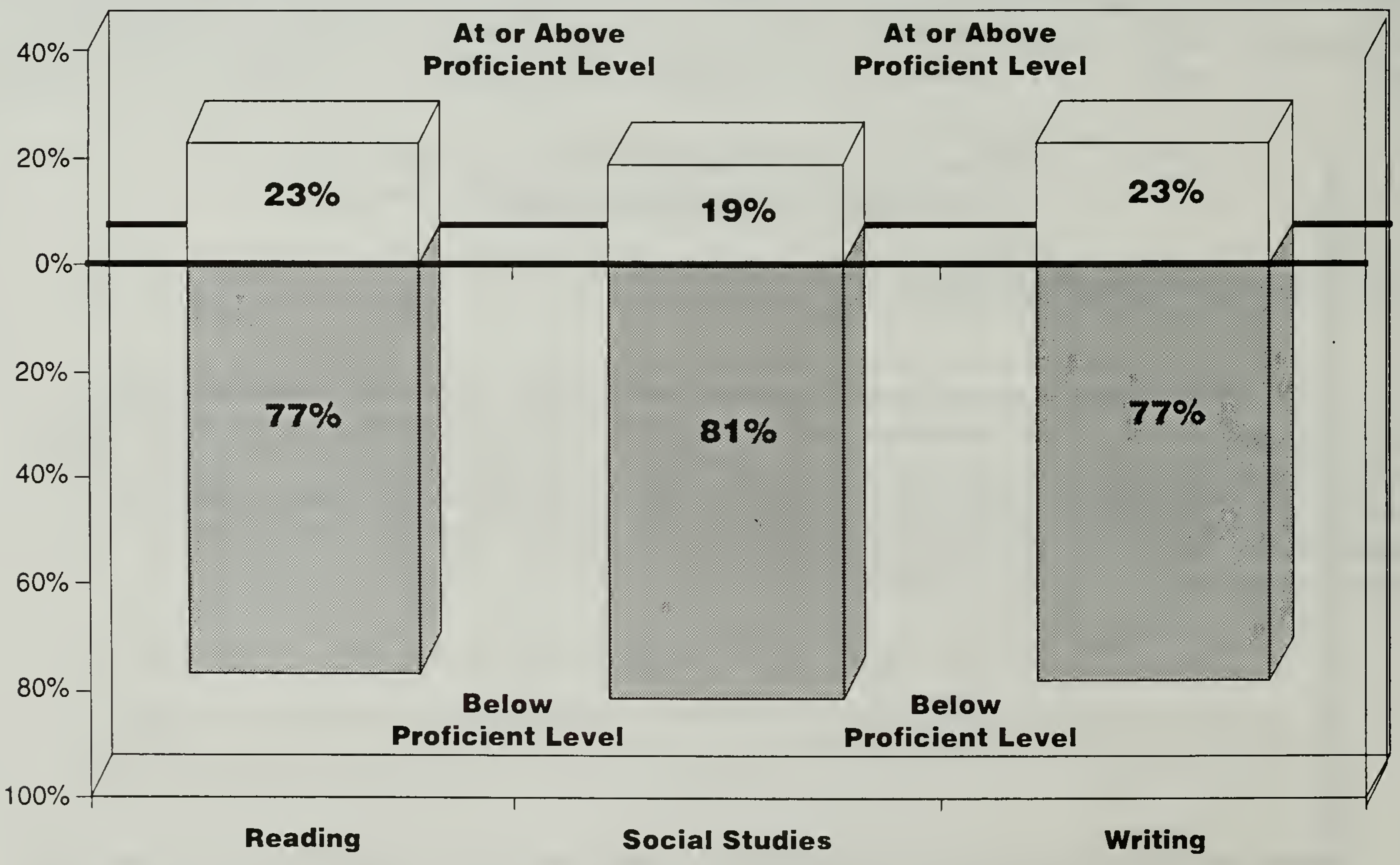
As a result of the changes incorporated in the Education Reform Act, the MEAP assessments were given to grades four, eight, and ten in the spring of 1994. Although the MEAP assessment will not serve as the assessment mandated under the Act, (the standards for successful completion of the new assessment should be significantly higher than the standards implicit in the MEAP assessment), the MEAP is expected to serve as a "bridge" until the new assessment is ready. The results of the 1994 MEAP assessment should be released at the end of 1994.

## Topic: The MEAP scores: Reading, Writing and Social Studies

Many inferences can be drawn from the MEAP assessment results:

- In all five subjects, the percentage of students scoring at the highest three levels of proficiency is greater at grade four than at grade twelve.
- Grade twelve has the highest percentage of students in each subject performing at the highest level of IV. However, the paths to learning take widely different routes: Grade twelve also has the highest percentage of students in each subject at the lowest level of proficiency.

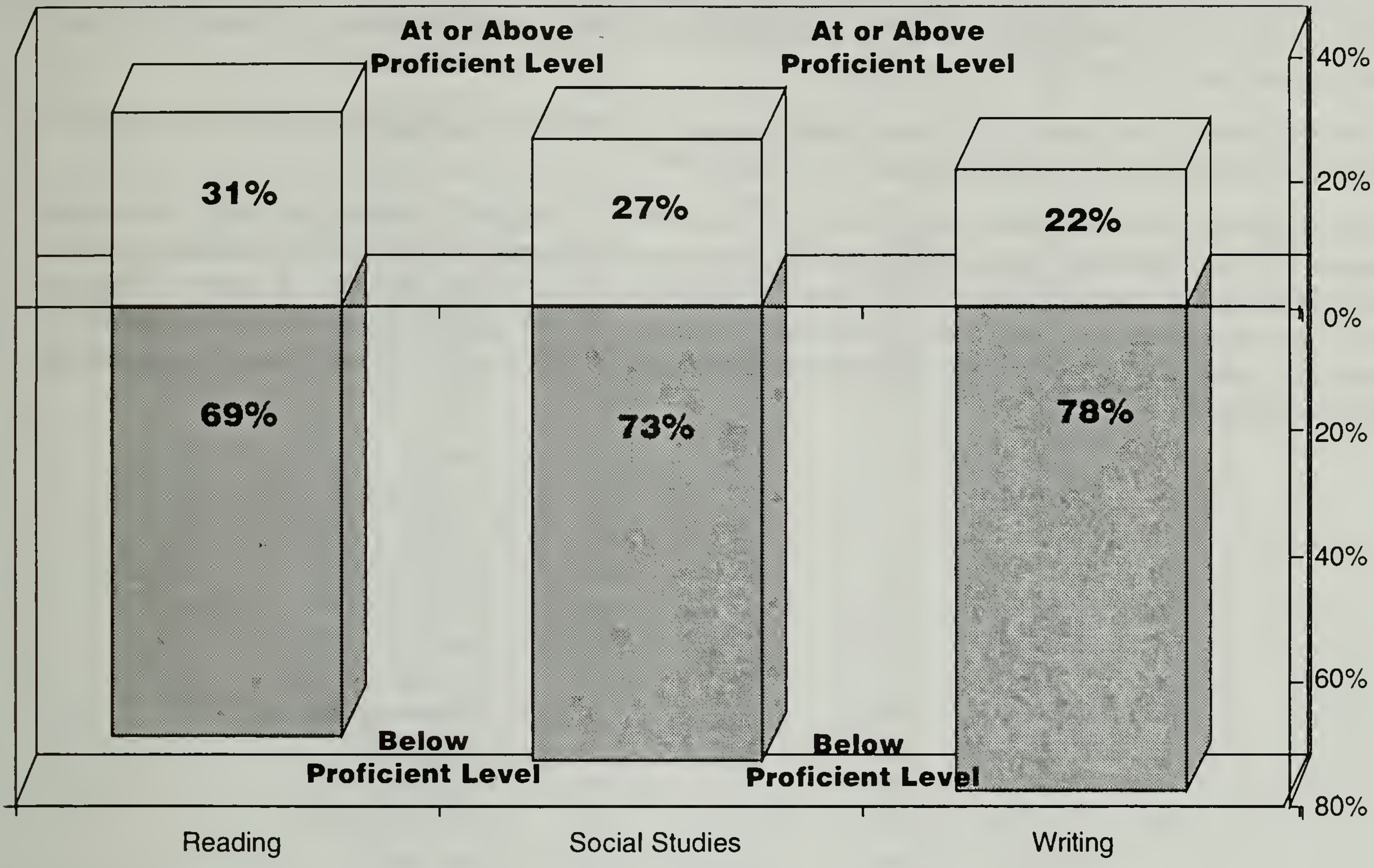
**Chart 3.2. Proficiencies in Reading, Social Studies and Writing: Grade 4. 1992 MEAP results**



*Source: Massachusetts Department of Education*

## Additional Important Information to Evaluate Improvement in Education: Proficiency Scores in Reading, Writing and Social Studies

**Chart 3.3. Proficiencies in Reading, Social Studies and Writing: Grade 8. 1992 MEAP results**



*Source: Massachusetts Department of Education*

## Topic: The NAEP scores: Reading at 4th grade

In 1992, the National Assessment of Educational Progress issued its first report on reading scores for fourth grade students in the nation. Again, like many other such reports, Massachusetts fared well when compared with other states: with 32% of the fourth graders demonstrating proficiency on the NAEP tests, Massachusetts ranked first among the states.

While first among the states is a notable feat, the reality is that 68% of Massachusetts fourth graders were not performing at an acceptable level of achievement.

This figure of 32% demonstrating proficiency on the NAEP was higher than the 23% score which was registered by the 1992 MEAP assessment. Although the assessments are not fully comparable, the confirming aspect of both assessments is that the preponderance of fourth graders are simply not able to demonstrate proficiency in a very rudimentary skill -- reading. At the same time, as the states seek to improve their education systems, Massachusetts appears to be in a better position to reach international standards faster.

## Additional Important Information to Evaluate Improvement in Education

### Table 3.1 NAEP Reading Assessment for 4th Grade Students

| State/District | 4th Grade Proficiency Score | RANK | Pct. Scoring At or Above Proficiency | RANK |
|---|---|---|---|---|
| **NATION** | **216** | ▨ | **24%** | ▨ |
| Alabama | 208 | 31 | 17% | 31 |
| Arizona | 210 | 29 | 18% | 29 |
| Arkansas | 212 | 25 | 20% | 23 |
| California | 203 | 34 | 17% | 31 |
| Colorado | 218 | 16 | 22% | 18 |
| Connecticut | 223 | 6 | 30% | 4 |
| Delaware | 214 | ▨ | 21% | ▨ |
| Dist. of Columbia | 189 | 36 | 8% | 36 |
| Florida | 209 | 30 | 18% | 29 |
| Georgia | 213 | 22 | 22% | 18 |
| Hawaii | 204 | 33 | 15% | 33 |
| Idaho | 221 | 12 | 24% | 14 |
| Indiana | 222 | 7 | 27% | 10 |
| Iowa | 227 | 1 | 32% | 1 |
| Kentucky | 214 | 20 | 19% | 27 |
| Louisiana | 205 | 32 | 13% | 34 |
| Maine | 228 | ▨ | 31% | ▨ |
| Maryland | 212 | 25 | 21% | 22 |
| **Massachusetts** | **227** | **1** | **32%** | **1** |
| Michigan | 217 | 18 | 23% | 17 |
| Minnesota | 222 | 7 | 28% | 6 |
| Mississippi | 200 | 35 | 12% | 35 |
| Missouri | 221 | 12 | 26% | 11 |
| Nebraska | 222 | ▨ | 27% | ▨ |
| New Hampshire | 229 | ▨ | 34% | ▨ |
| New Jersey | 224 | ▨ | 31% | ▨ |
| New Mexico | 212 | 25 | 20% | 23 |
| New York | 216 | ▨ | 23% | ▨ |
| North Carolina | 213 | 22 | 22% | 18 |
| North Dakota | 227 | 1 | 31% | 3 |
| Ohio | 219 | 15 | 24% | 14 |
| Oklahoma | 221 | 12 | 25% | 13 |
| Pennsylvania | 222 | 7 | 28% | 6 |
| Rhode Island | 218 | 16 | 24% | 14 |
| South Carolina | 211 | 28 | 19% | 27 |
| Tennessee | 213 | 22 | 20% | 23 |
| Texas | 214 | 20 | 20% | 23 |
| Utah | 222 | 7 | 26% | 11 |
| Virginia | 222 | 7 | 28% | 6 |
| West Virginia | 217 | 18 | 22% | 18 |
| Wisconsin | 225 | 4 | 29% | 5 |
| Wyoming | 224 | 5 | 28% | 6 |

*Grey area signifies that the state did not satisfy one or more guidelines for sample participation*

## Topic: Advanced Placement tests

Nationwide, almost 50% of all high schools offer at least some college-level Advanced Placement (AP) courses. In 1992, 289 high schools in Massachusetts offered AP courses. In 1992, Massachusetts ranked fourth in the nation, behind Connecticut, New Jersey, and the District of Columbia, with 74% of its high schools participating in the AP program. Massachusetts had 9.4% of its high school juniors and seniors enrolled in AP courses, making it ninth among all states in 1992.

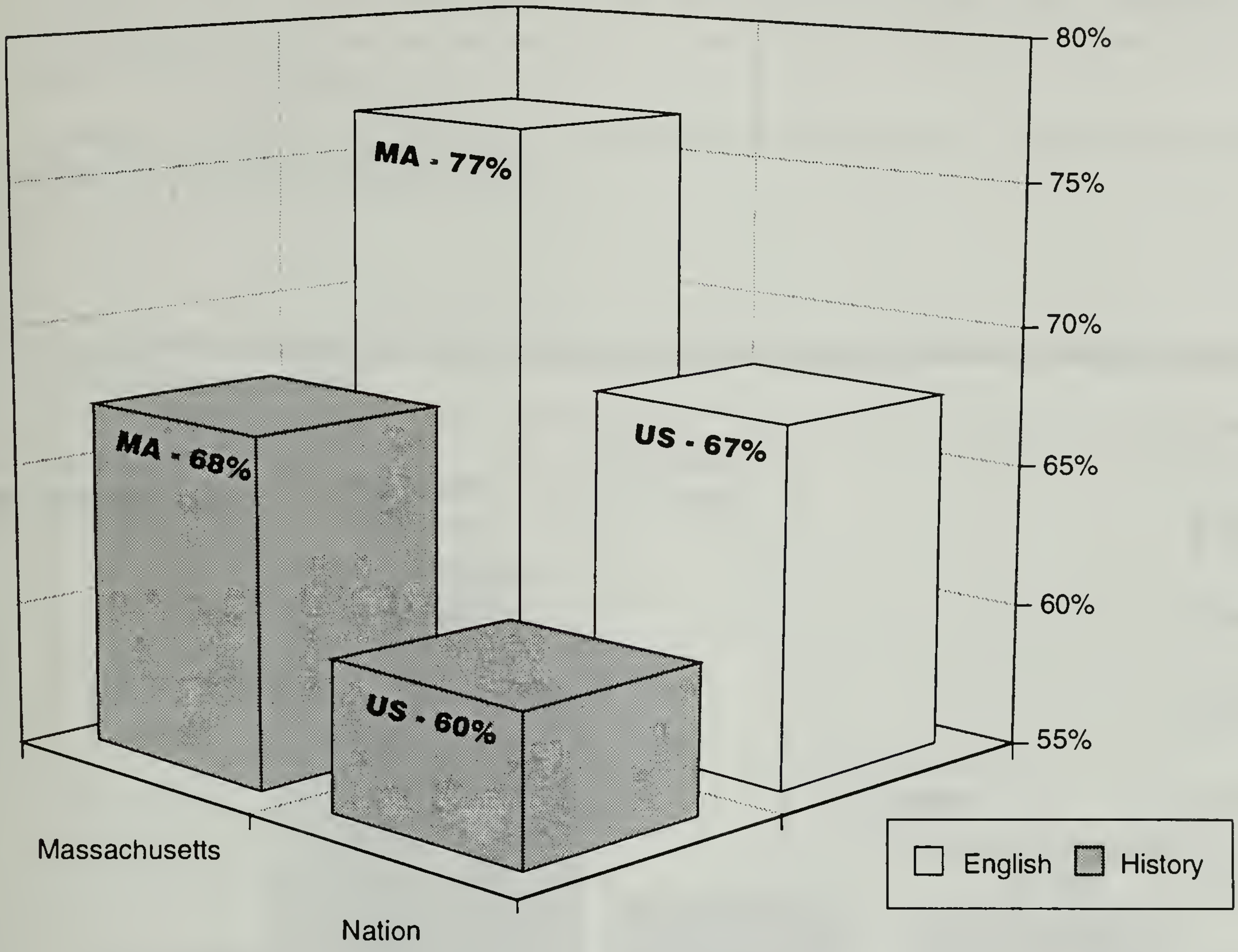
AP examinations are graded on a scale of 1 to 5. A grade of five is interpreted as "extremely well qualified" for college-level course credit. A grade of 3 or 4 is interpreted to mean that a student is "qualified" and "well qualified" to receive college credit. A grade of 3 or above is generally considered "passing." Students receiving grades of 3-5 on their AP exams are generally granted college-level credit by the

**Table 3.2. Trends in Advanced Placement Examinations in Massachusetts**

| | | | | Total Exams Taken by Year | | |
|---|---|---|---|---|---|---|
| Subject | Scores 3 and Above | Scores Below 3 | Passing Grades | 1990 | 1991 | 1992 |
| *Biology - MA* | *989* | *401* | *71.2%* | *1,215* | *1,261* | *1,390* |
| Biology - US | 26,084 | 14,374 | 64.5% | 32,643 | 36,351 | 40,458 |
| *Chemistry - MA* | *541* | *229* | *70.3%* | *614* | *726* | *770* |
| Chemistry - US | 14,788 | 10,658 | 58.1% | 19,289 | 22,513 | 25,446 |
| *Physics - MA* | *705* | *240* | *74.6%* | *862* | *814* | *945* |
| Physics - US | 15,001 | 7,489 | 66.7% | 17,676 | 20,390 | 22,490 |
| *Mathematics - MA* | *2,352* | *864* | *73.1%* | *2,744* | *3,031* | *3,216* |
| Mathematics - US | 61,501 | 28,813 | 68.1% | 75,772 | 83,360 | 90,314 |
| *English - MA* | *2,898* | *887* | *76.6%* | *3,350* | *3,609* | *3,785* |
| English - US | 95,008 | 46,464 | 67.2% | 123,138 | 131,431 | 141,472 |
| *History - MA* | *2,935* | *1,403* | *67.6%* | *3,860* | *3,861* | *4,338* |
| History - US | 79,532 | 52,758 | 60.2% | 116,629 | 124,569 | 132,290 |
| *Music Theory - MA* | *56* | *37* | *60.2%* | *50* | *42* | *93* |
| Music Theory - US | 1,138 | 561 | 70.0% | 1,121 | 1,299 | 1,699 |
| *Art History - MA* | *118* | *51* | *69.8%* | *109* | *111* | *169* |
| Art History - US | 3,120 | 1,087 | 74.2% | 3,109 | 3,737 | 4,207 |
| *Art - MA* | *104* | *44* | *72.2%* | *130* | *142* | *144* |
| Art - US | 3,999 | 1,451 | 73.4% | 3,966 | 5,241 | 5,450 |
| *French - MA* | *569* | *195* | *74.5%* | *849* | *830* | *764* |
| French - US | 7,275 | 4,947 | 59.5% | 11,645 | 11,874 | 12,222 |
| *German - MA* | *48* | *4* | *92.3%* | *59* | *57* | *52* |
| German - US | 1,411 | 662 | 68.1% | 2,228 | 2,132 | 2,073 |
| *Spanish - MA* | *650* | *107* | *85.9%* | *680* | *683* | *757* |
| Spanish - US | 24,044 | 5,952 | 80.2% | 24,126 | 26,789 | 29,996 |
| *Latin - MA* | *246* | *65* | *79.0%* | *339* | *336* | *311* |
| Latin - US | 2,055 | 1,112 | 64.9% | 2,711 | 3,064 | 3,167 |

## Direct Measure of Progress toward the National Education Goals: Advanced Placement Tests

**Chart 3.4. Passing rates on Advanced Placement examinations in English and History. 1992. Comparison of Massachusetts and the Nation**



*Source: The College Board; Executive Office of Education; Passing rate considered a score of 3 or above.*

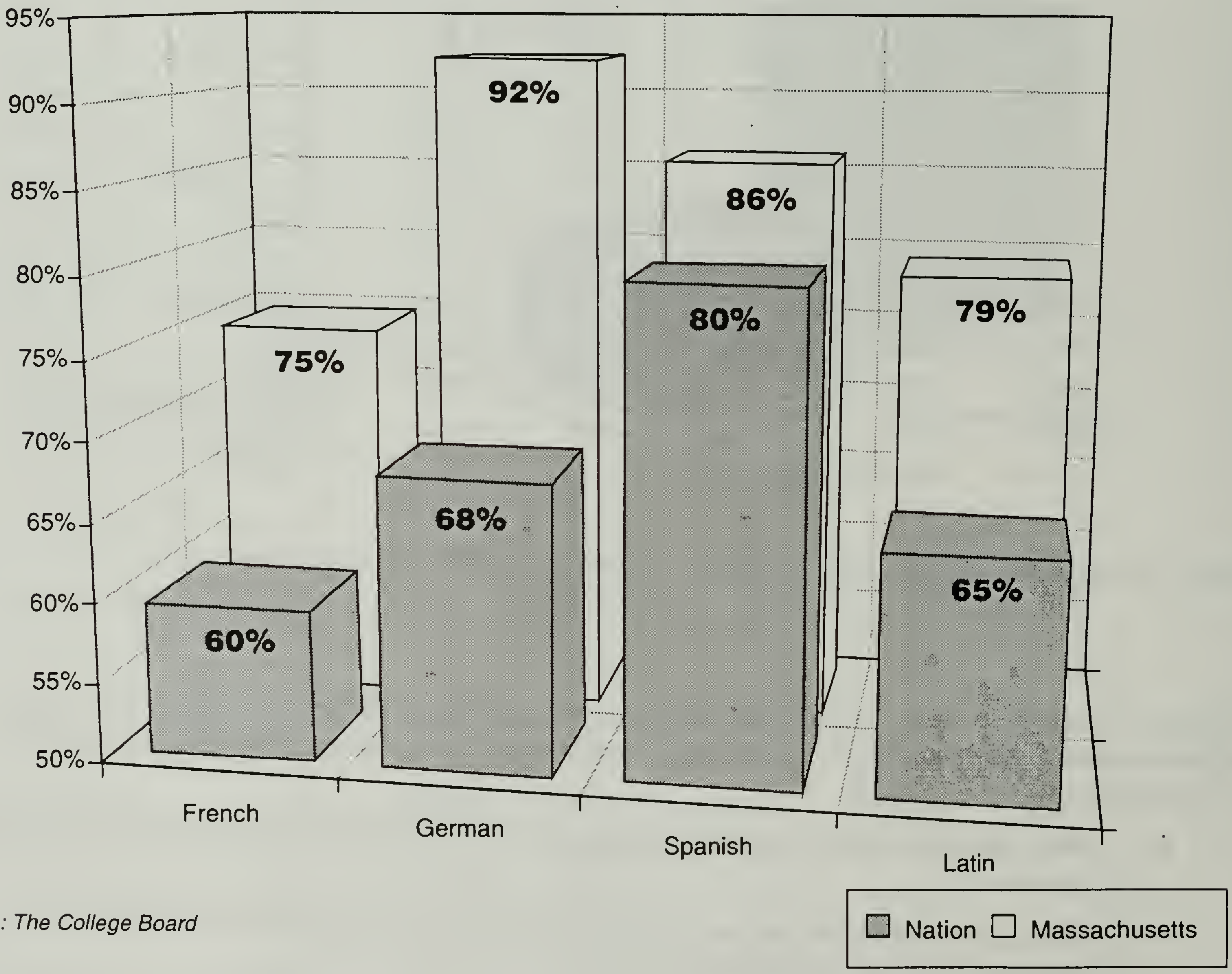
colleges in which they enroll. A grade of 1 receives "no recommendation" for credit by the AP program, while a grade of 2 is interpreted as "possibly qualified," though generally not accepted by higher education institutions for course credit.

- In 1992, Massachusetts was fourth among states in the percentage of its high schools offering AP courses.
- 9.4% of all Massachusetts high school juniors and seniors are enrolled in at least one AP course, as compared to 6.9% nationwide.

## Topic: Advance Placement tests in fine arts and foreign languages

Massachusetts students also are well above national averages in obtaining passing AP grades on foreign language examinations (from 5.7% more in Spanish to 24.2% more in German). However, Massachusetts students lag behind the national average in the percentage of examinees with passing grades on Fine Arts examinations (0.8% fewer in Music Theory to 4.4% fewer in Art History).

**Chart 3.5. AP results in foreign languages: Massachusetts and the Nation. 1992**



*Source: The College Board*

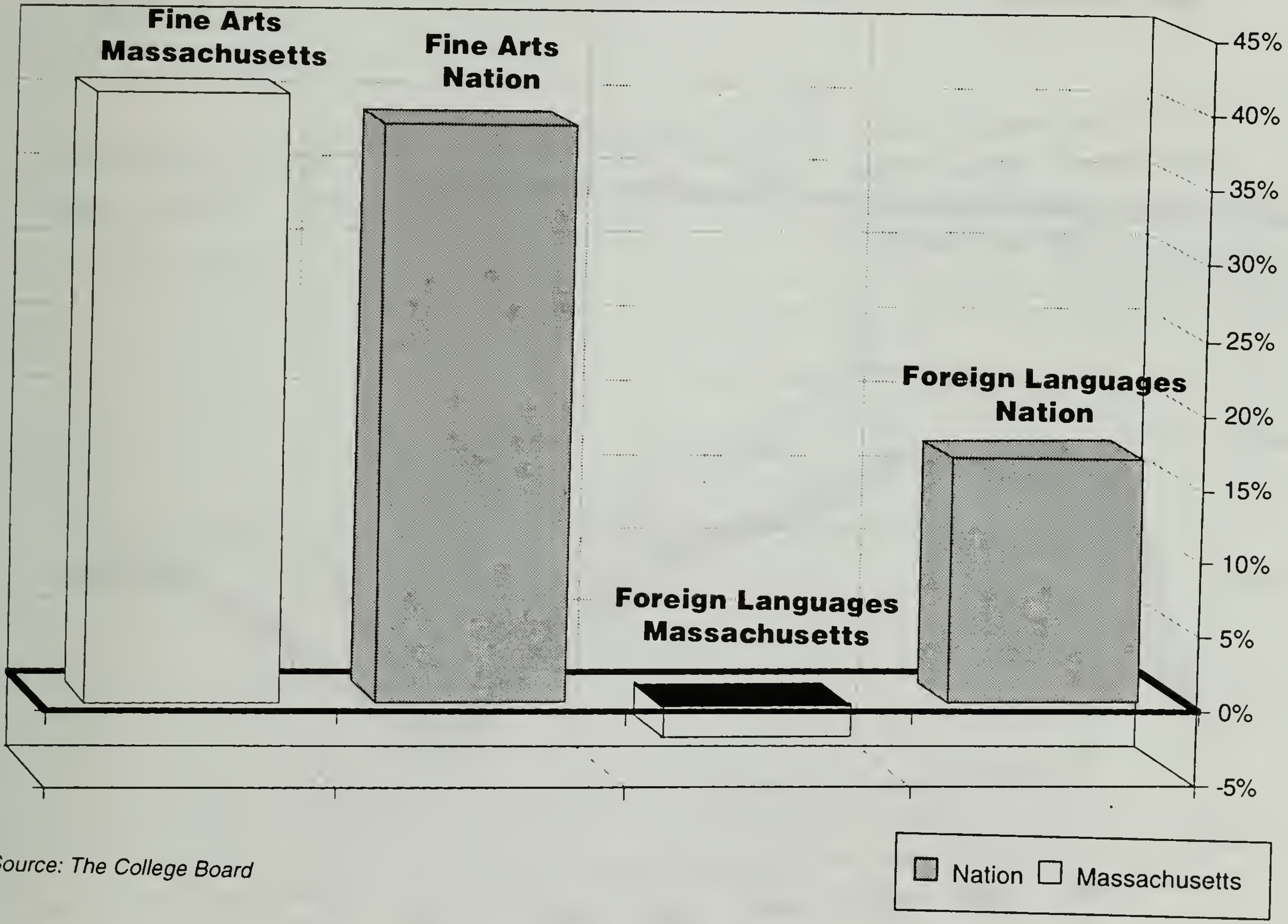
French results include both French Language and French Literature tests.

Spanish results include both Spanish Language and Spanish Literature tests.

## Direct Measure of the Goal: Advanced Placement Participation and Performance

- While Massachusetts students continue to do well on foreign language AP examinations, the number of students taking foreign language AP exams has decreased since 1990. This is obviously a concern as the state moves into implementing the Common Core of Learning which calls for students to know a second language. Future *Condition* reports will be better able to ascertain any such trends.
- However, the number of Massachusetts examinees in the Fine Arts has increased at a slightly higher pace than the national average.

**Chart 3.6. Changes in AP participation in foreign languages and the fine arts: Massachusetts and the Nation. 1992**



*Source: The College Board*

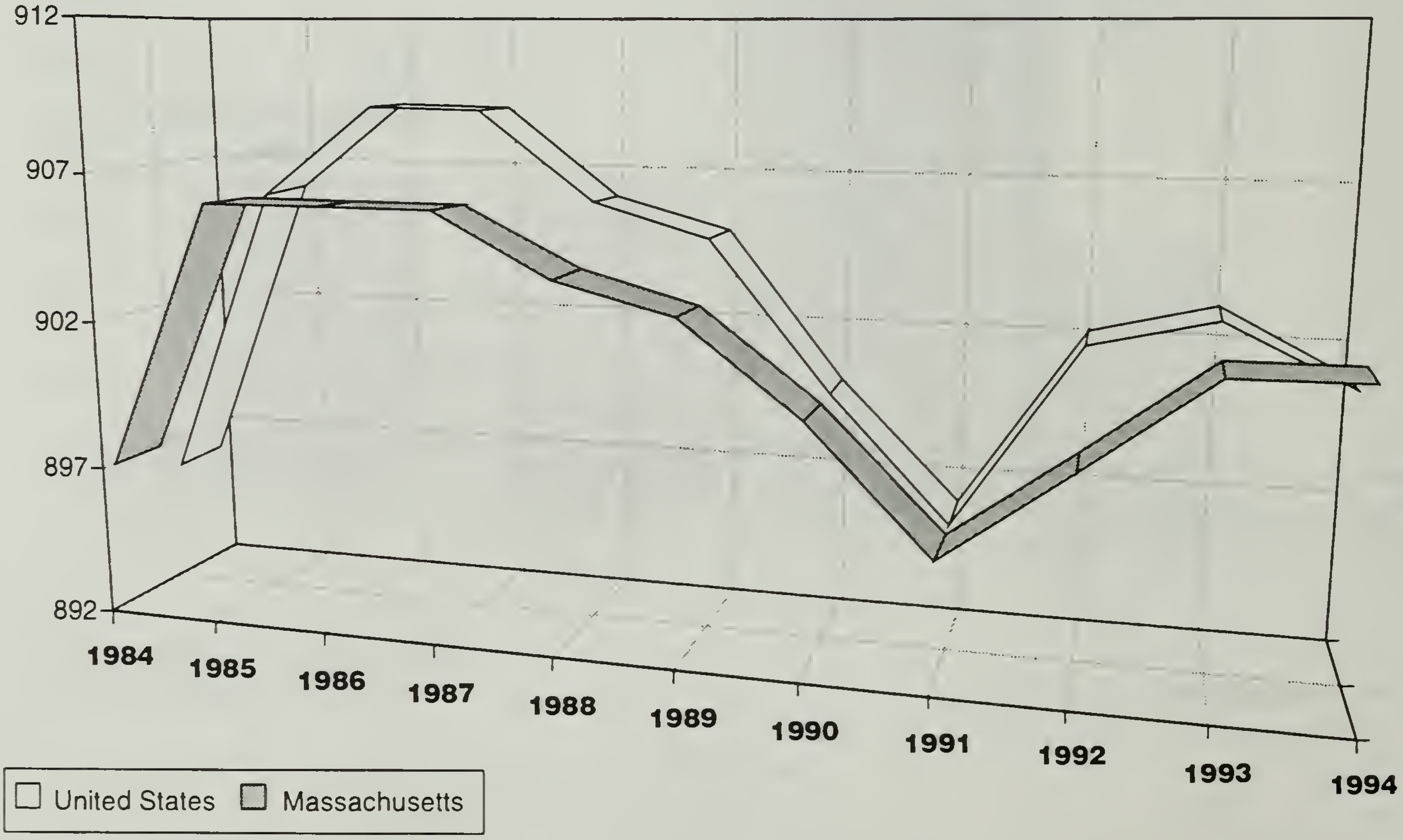
## Topic: SAT scores in Massachusetts

The Scholastic Assessment Test (SAT) is one of the more widely known student assessments. In Massachusetts, nearly 80% of high school graduates take the examination annually. Nationally, this figure is 42% -- about half the Massachusetts level.

Again, as many of the academic indicators, the SAT results provide a mixed story about Massachusetts students: --

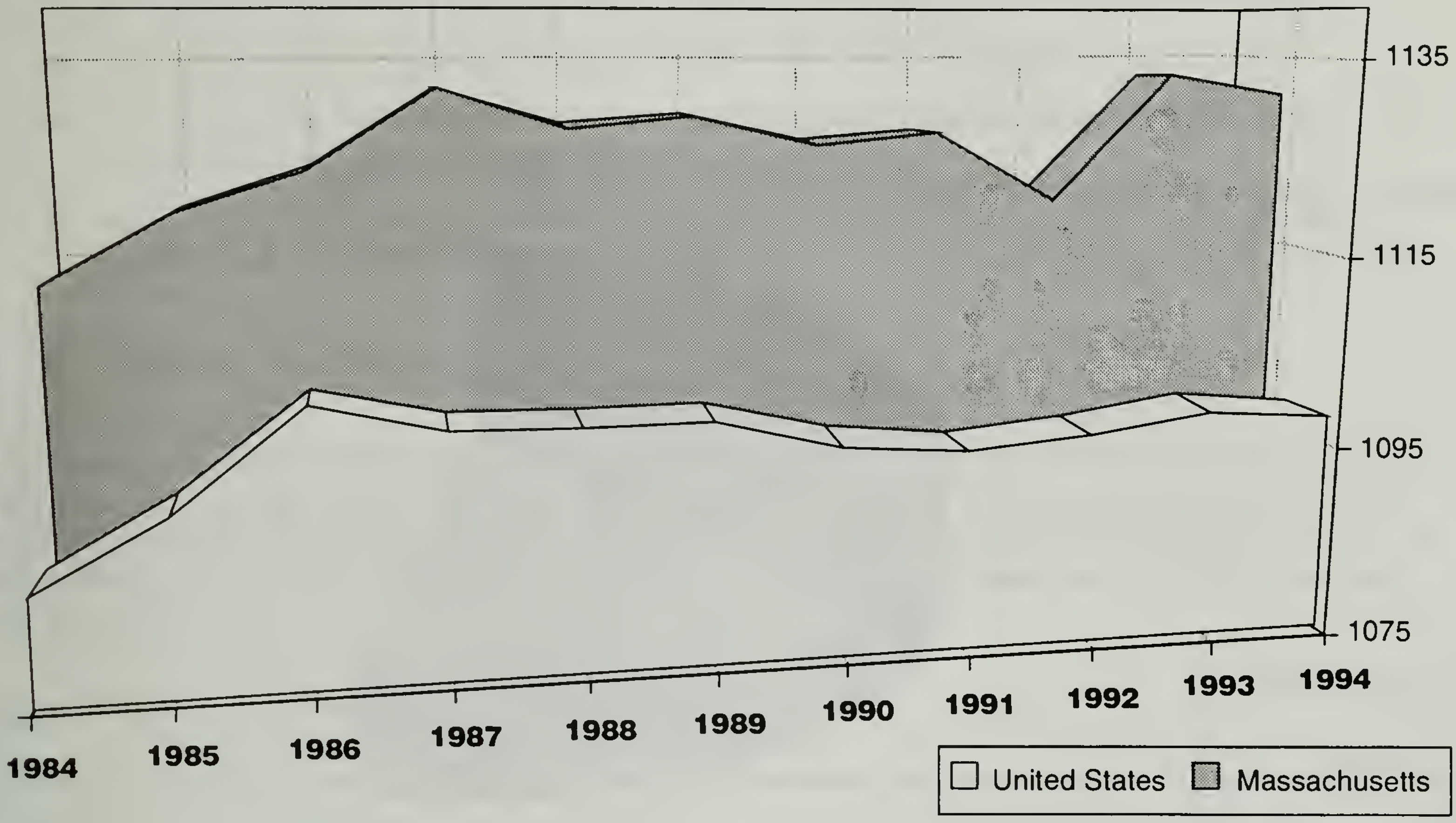
- Over the past decade, Massachusetts average SAT scores have risen, declined, and risen again. The fluctuations have roughly kept pace with the national averages.
- When comparing the higher achieving students in Massachusetts with their peers nationally, Massachusetts students do significantly better. The top 10% of the students in Massachusetts score about 40-50 points higher than the top 10% of the class nationally. Similar scores are also seen with the second 10% of the students.
- Massachusetts public school students trail Massachusetts parochial school students in average verbal SAT scores but have higher average mathematics SAT results. Both the public and parochial students trail the results of students attending independent schools.

**Chart 3.7. SAT scores in Massachusetts and the U.S. 1984-94**



## Additional Important Information to Evaluate Improvement in Education: Scholastic Assessment Test Results

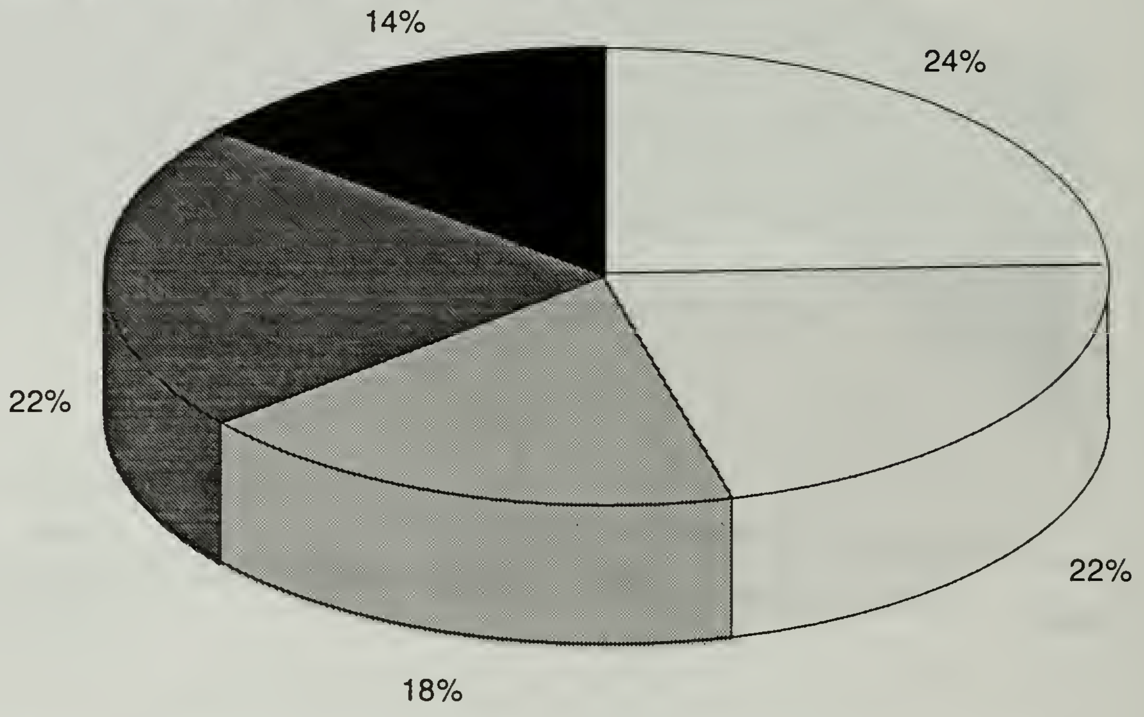
**Chart 3.8. SAT scores of students in top 10% of class in Massachusetts and the U.S. 1984-94**



## Topic: Television viewing

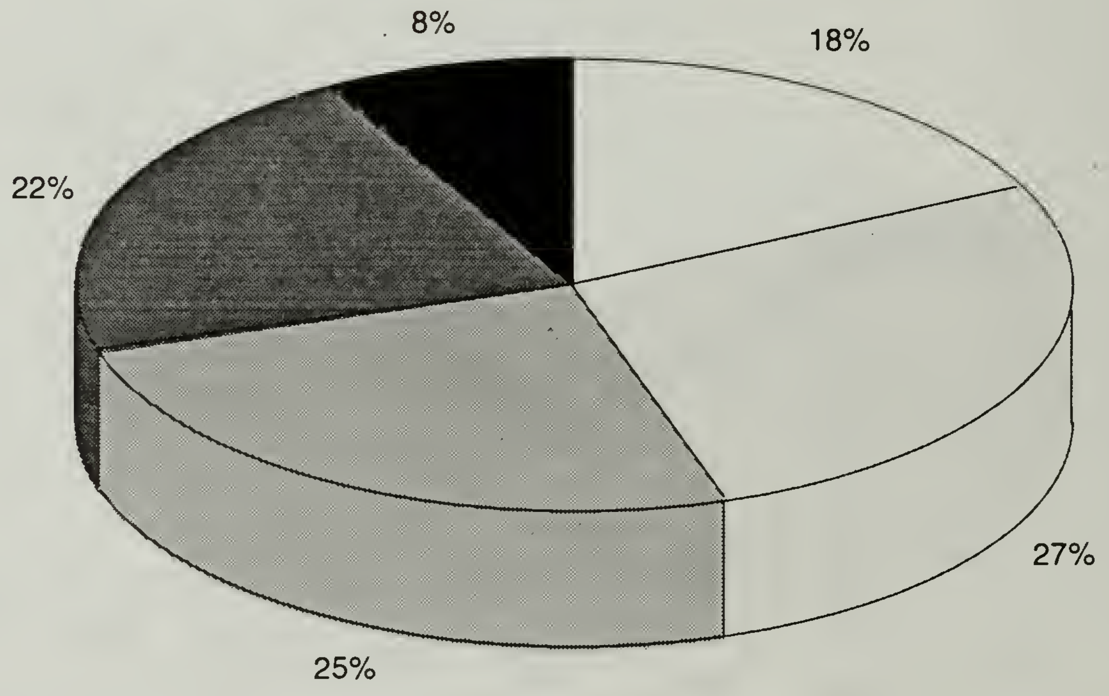
The amount of television viewing has a strong inverse correlation with student achievement. Significant hours of television viewing have also been linked to attitudes about violence.

**Chart 3.9. Television viewing for 4th Graders in Massachusetts**



☐ 1 hour or less
☐ 2 hours
▨ 3 hours
▨ 4-5 hours
■ 6 or more hours

**Chart 3.10. Television viewing for 8th Graders in Massachusetts**



*Source: National Assessment of Educational Progress. 1992*

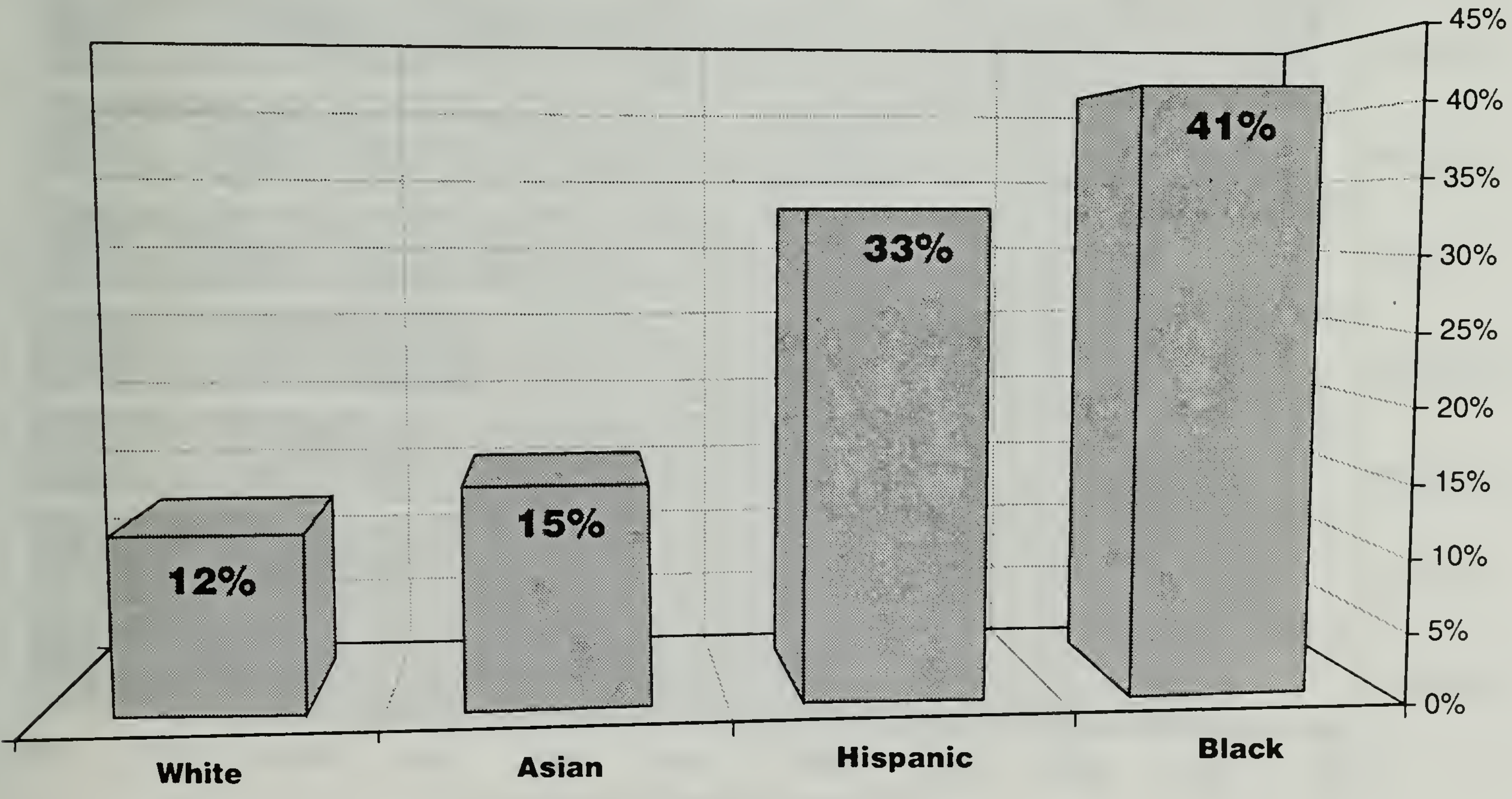
## Additional Important Information to Evaluate Improvement in Education: Television Viewing

In Massachusetts, among the fourth graders, the amount of television watched is slightly less than with their peers in the nation, while Massachusetts eighth graders watch slightly more TV than their peers.

- 14% of the Massachusetts fourth grade students watched six or more hours of televsion.
- Nationally, the figure for fourth graders is 21%.
- By eighth grade, fewer Massachusetts students appear to be watching television as extensively (only 8% of the students are watching six or more hours).
- However, more students are watching several hours: in fourth grade, 62% of the Massachusetts students watch 2-5 hours; but by eighth grade, 74% of the Massachusetts students watch 2-5 hours.
- Nationally, 71% of eighth graders watch 2-5 hours of TV.

The level of intensive TV viewing among the students when considering race or ethnicity is disturbing. When 41% of the African-American fourth graders in Massachusetts are watching six or more hours of television, there is ample reason to be concerned about the ability to deal effectively with higher levels of learning and attitudes about violence among the students who perhaps most need education as a way out of poverty.

**Chart 3.11. Percentages of 4th grade students who view 6 or more hours of TV per day (by race)**



*Source: National Assessment of Educational Progress. 1992*

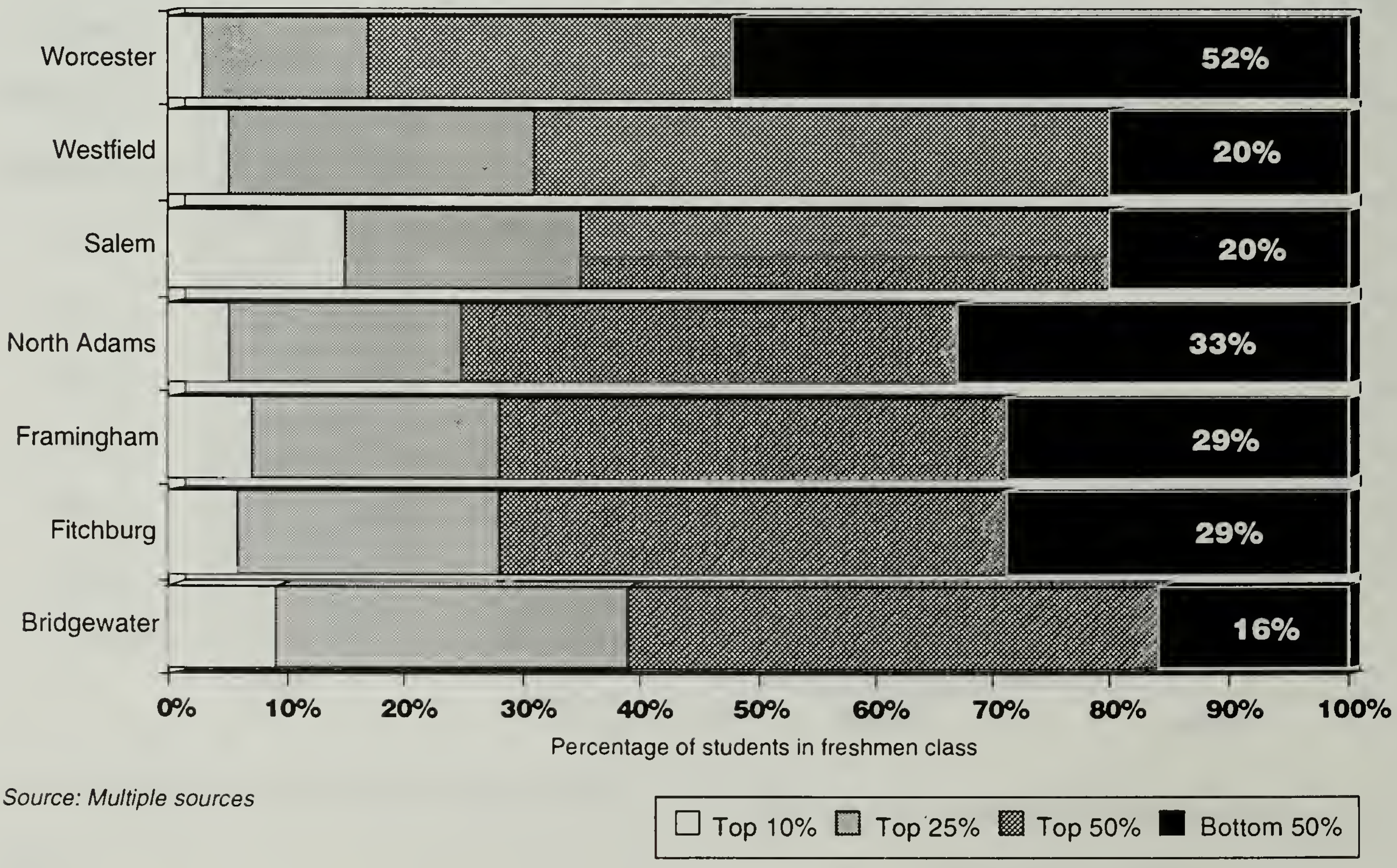
**Topic: Class rank and SAT scores at state colleges**

There have been several voices raising concerns about the standards for admission at the state colleges. There have been several interesting developments:

- Although the enrollment at state colleges has declined, such declines have not been as steep as the overall decline in high school graduates.
- Somewhat curiously, even though the overall enrollment of high school students in four-year colleges is up considerably over the decade, the increase in *private* four-year college enrollments is significantly greater than the increase in *public* four-year colleges.
- The return rate of first-year students averages about 75%; the completion rate within six years ranges from 45-60%.

It is clear that there are some accommodations that have been made by the state colleges. There is a significant number of students ranked inthe bottom half of their high school class who have been admitted to a state college. Further, the average SAT score of entering first-year students at several state colleges do not meet the state SAT average.

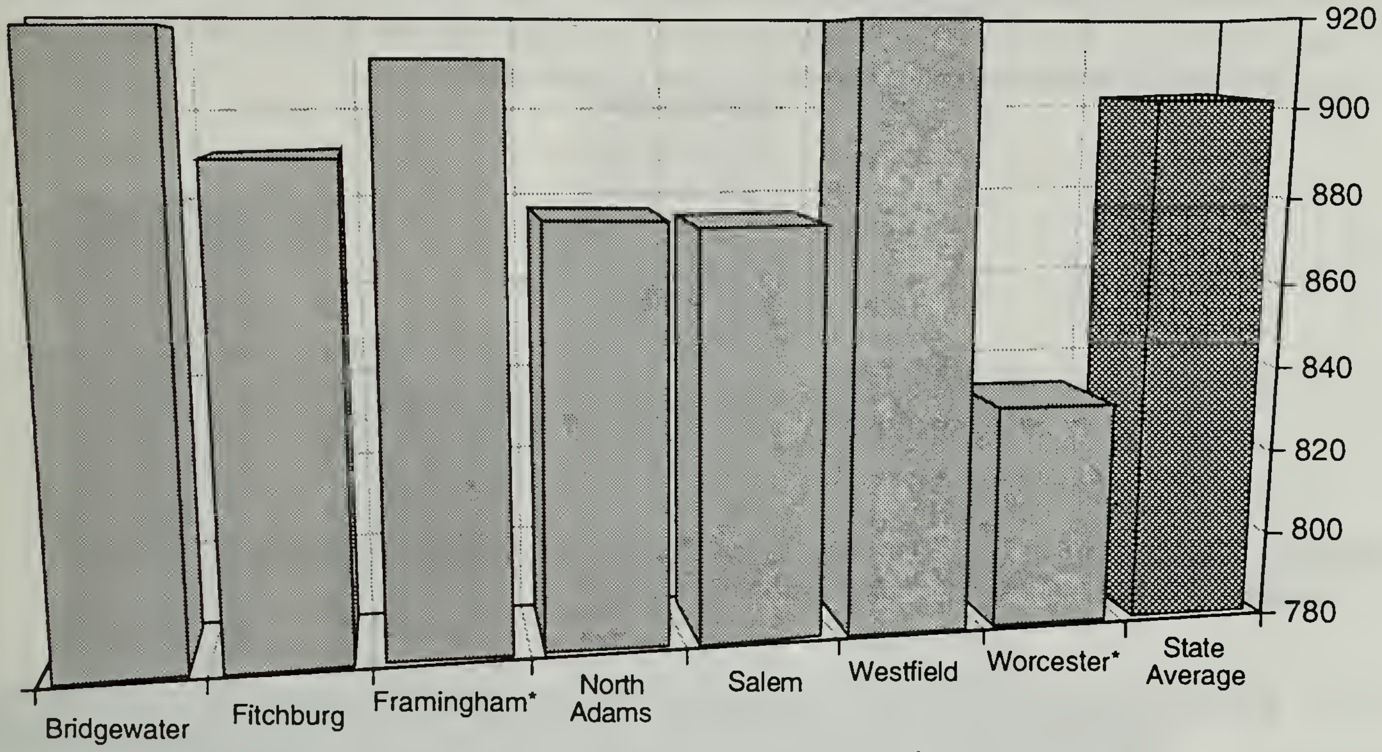
**Chart 3.12. The class rank of entering first year students at selected state colleges; By percentage of entering class.**



Source: Multiple sources

## Additional Important Information to Evaluate Improvement in Education: Standards at State Colleges

**Chart 3.13. The average SAT scores of entering first year students at selected state colleges.**

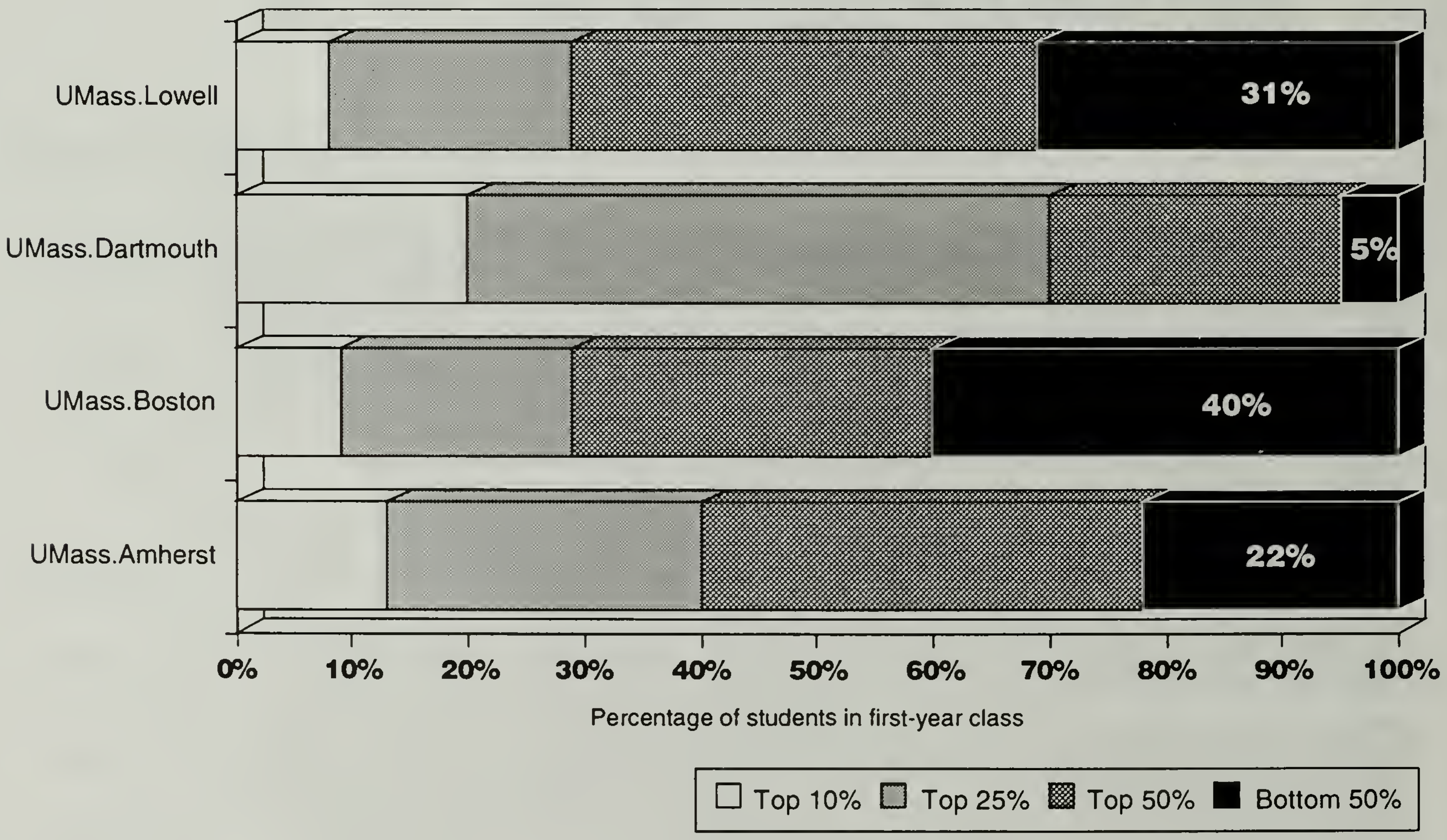


* Represents 1992 data.

## Topic: Class rank and SAT scores at UMass campuses

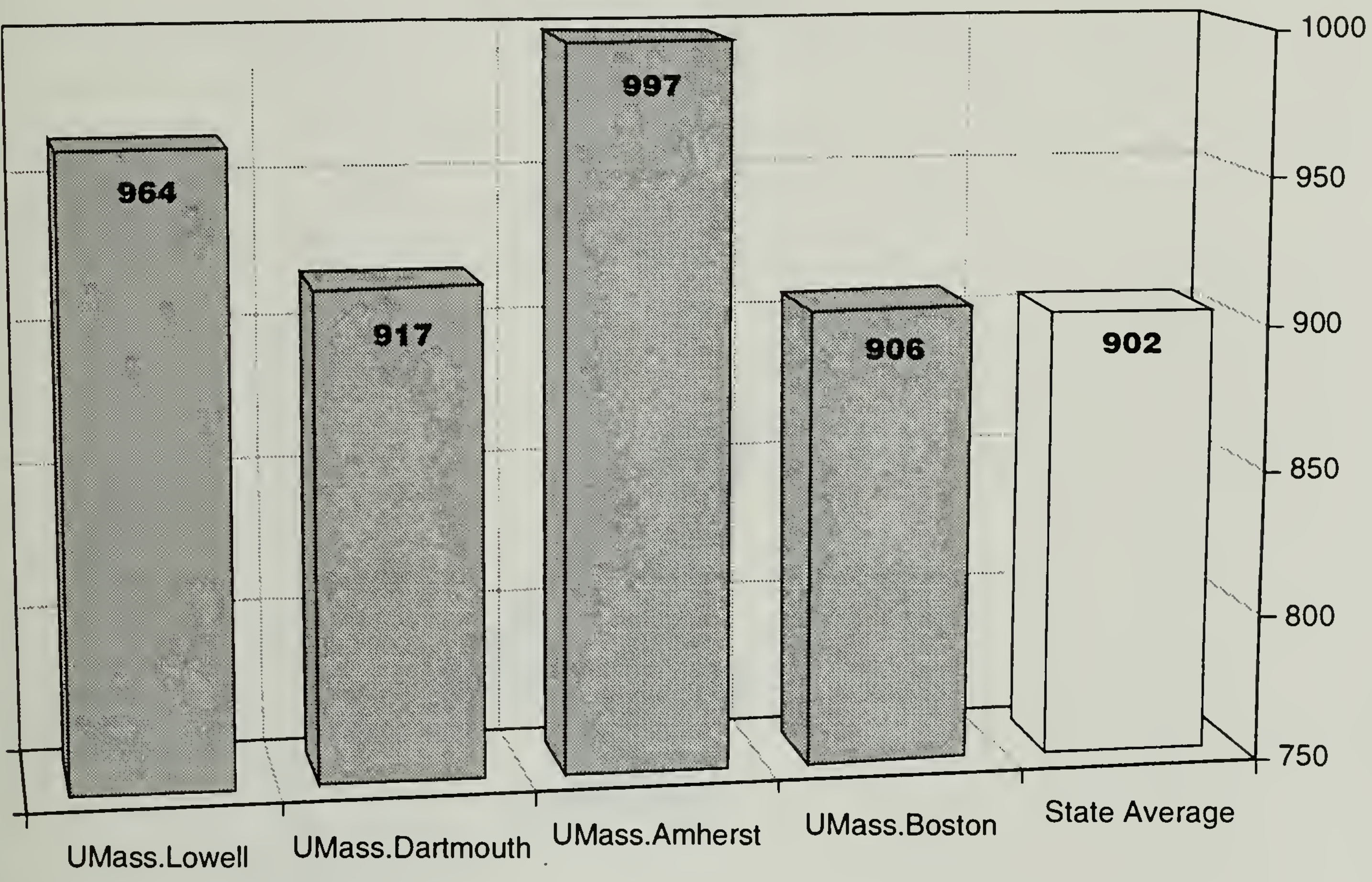
The goal has been to fashion a world-class public university at the UMass campuses. The 1991 legislation which consolidated the public universities within one board of trustees was seen as a siginificant step forward for the university. A second important step was the hiring of Michael Hooker, an energetic president with a vision matching the challenges at UMass.

**Chart 3.14. The class rank of entering first year students at undergraduate UMass campuses; By percentage of entering class.**



## Additional Important Information to Evaluate Improvement in Education: Standards at UMass campuses

**Chart 3.15. The average SAT scores of entering first year students at UMass campuses.**



*Source: University of Massachusetts; 1992 data*

*GOAL*

# 4

# First in Math and Science

An argument can be made that Massachusetts' success or failure as an economic force in the future will depend on the ability of our schools to realize this goal.

Massachusetts has little to offer in terms of natural resources ...save one: our people. The intelligence and work ethic of our men and women, forged by some of the finest schools, colleges and universities in the world, has assisted Massachusetts in competing as a leading center for technology in the world. The meaning of a well-educated workforce in high tech industries was evident in the aerospace era, and the early years of the computer industry. Now, as companies adapt to new competitive pressures, the remaining advantage for Massachusetts is its workforce. And the math and science training of the workforce will be a major part of the emerging technologies and future economic growth of the state.

As has been documented by many studies over the past decade, American students do not do as well as their international counterparts in critical areas such as math and science. This gap in achievement has several facets. For the first time, in 1993, the U.S. Department of Education provided data which facilitated the comparison of states with international counterparts.

From the Massachusetts Assessment of Educational Progress, data demonstrates in detail the distrubing picture of proficiency attainment in these critical subject areas. Obviously, much needs to be done to strengthen student performance as we move to the year 2000:

**Average State Proficiency Scores**

|  | 1992 MEAP<br>Levels 3 & 4 (aggregated) | 1992 NAEP |
|---|---|---|
| **Grade 4** |  |  |
| SCIENCE | 20% | N/A |
| MATHEMATICS | 17% | 27% |
| **Grade 8** |  |  |
| SCIENCE | 31% | N/A |
| MATHEMATICS | 25% | 31% |
| **Grade 12** |  |  |
| SCIENCE | 31% | N/A |
| MATHEMATICS | 27% | N/A |

### Project PALMS

In Massachusetts, several steps are underway to directly deal with this goal. In 1992, the Massachusetts Department of Education was the recipient of a $5 million grant from the National Science Foundation to raise the quality of teaching and curriculum activities in the state's school districts. The project, now called PALMS, the *Partnerships Advancing Learning of Math and Science*, is working with several universities in the Commonwealth to engage classroom teachers, especially at the elementary school level, in the development of new teaching units that will help teachers and the students they serve to be better informed about science and math. Over the five-year life of this staff development project, a large portion of Massachusetts' elementary teachers will have participated, and concurrently improved, their teaching of science and math. Project PALMS also worked to develop the state's first curriculum frameworks for mathematics, science and technology.

### The Massachusetts Academy for Mathematics and Science at WPI

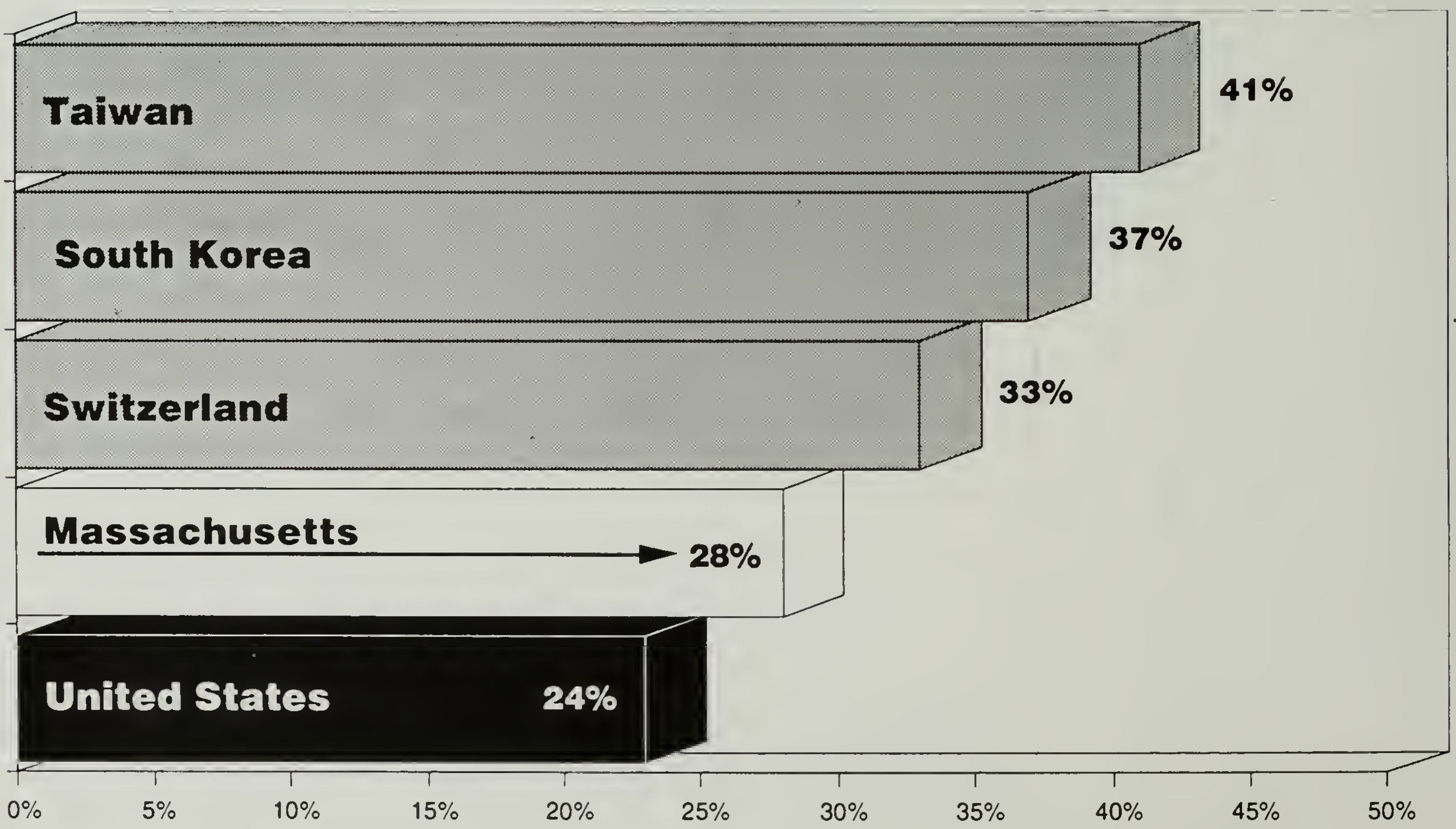
In 1991, a bold new initiative was established at the Worcester Polytechnic Institute. The Massachusetts Academy for Mathematics and Science at WPI accepted about 50 students for a program directed to high levels of learning in mathematics and science. In addition, teachers from area school districts also were accepted for a year's sabbatical at WPI in order to enhance their teaching of math and science. This program has grown since 1991. In 1994, the Executive Office of Education will be undertaking a study of the program to determine future expansion and possible other sites for similar programs.

## Topic: National and International Comparisons of Proficiency in Mathematics

Massachusetts ranks ahead of the national average in math proficiency scores, but lags behind the proficiency levels of international peers.

- Fourth graders in Massachusetts do better than their peers in many other states, with Massachusetts ranked 7th in proficiency scores.
- Irrespective of this high standing among the states, when compared to the more objective standard of proficiency level, only 24% of Massachusetts' 4th graders exhibited at or above a proficient level of understanding. This level of performance was significantly better than the national average of 18% of 4th graders demonstrating proficiency in math.
- 8th grade Massachusetts students fell to 12th in comparison with 8th graders in other states, although their overall proficiency level increased slightly, to 28%. This proficiency score was slightly better than the national average of 24%.
- If the national goal is to make the students in this country rank first in math, there is still work to do: Massachusetts 8th grade students rank considerably behind their international peers. See chart 5A.
- Only Minnesota, Iowa and North Dakota rank among the best nations in math proficiency,

**Chart 4A. Comparisons of 8th grade math proficiencies, Massachusetts, U.S. and the leading nations**



*Sources: NAEP Mathematics Report Card for the Nation and the States; 1993 National Goals Report*

## Direct Measure of Progress Toward the National Education Goals: First in Math

### Table 4.1. Comparison of Math 4th & 8th Grade Proficiency Scores of the States

| State/District | 4th Grade Proficiency Score | RANK | Pct. Scoring At or above Proficiency | RANK | 8th Grade Proficiency Score | RANK | Pct. Scoring At or above Proficiency | RANK |
|---|---|---|---|---|---|---|---|---|
| **NATION** | **217** | | **18%** | | **266** | | **23%** | |
| Alabama | 207 | 38 | 10% | 37 | 251 | 39 | 12% | 39 |
| Arizona | 214 | 26 | 13% | 30 | 265 | 23 | 19% | 27 |
| Arkansas | 209 | 36 | 10% | 37 | 255 | 38 | 13% | 37 |
| California | 207 | 38 | 13% | 30 | 260 | 29 | 20% | 25 |
| Colorado | 220 | 15 | 18% | 18 | 272 | 12 | 26% | 13 |
| Connecticut | 226 | 7 | 25% | 5 | 273 | 11 | 30% | 7 |
| Delaware | 217 | 21 | 17% | 19 | 262 | 27 | 18% | 28 |
| Dist. of Columbia | 191 | 42 | 6% | 42 | 234 | 42 | 6% | 42 |
| Florida | 212 | 32 | 14% | 27 | 259 | 31 | 18% | 28 |
| Georgia | 214 | 26 | 16% | 22 | 259 | 31 | 16% | 32 |
| Hawaii | 213 | 31 | 15% | 26 | 257 | 37 | 16% | 32 |
| Idaho | 220 | 15 | 16% | 22 | 274 | 8 | 27% | 11 |
| Indiana | 220 | 15 | 16% | 22 | 269 | 17 | 24% | 16 |
| Iowa | 229 | 2 | 27% | 2 | 283 | 1 | 37% | 1 |
| Kentucky | 214 | 26 | 13% | 30 | 261 | 28 | 17% | 31 |
| Louisiana | 203 | 40 | 8% | 40 | 249 | 40 | 10% | 40 |
| Maine | 231 | 1 | 28% | 1 | 278 | 4 | 31% | 6 |
| Maryland | 216 | 25 | 19% | 13 | 264 | 25 | 24% | 16 |
| **Massachusetts** | **226** | **7** | **24%** | **8** | **272** | **12** | **28%** | **9** |
| Michigan | 219 | 19 | 19% | 13 | 267 | 18 | 23% | 20 |
| Minnesota | 227 | 6 | 27% | 2 | 282 | 3 | 37% | 1 |
| Mississippi | 200 | 41 | 7% | 41 | 246 | 41 | 8% | 41 |
| Missouri | 221 | 14 | 19% | 13 | 270 | 16 | 24% | 16 |
| Nebraska | 224 | 10 | 23% | 9 | 277 | 6 | 32% | 4 |
| New Hampshire | 229 | 2 | 26% | 4 | 278 | 4 | 30% | 7 |
| New Jersey | 226 | 7 | 25% | 5 | 271 | 14 | 28% | 9 |
| New Mexico | 212 | 32 | 11% | 36 | 259 | 31 | 14% | 36 |
| New York | 217 | 21 | 17% | 19 | 266 | 22 | 24% | 16 |
| North Carolina | 211 | 34 | 13% | 30 | 258 | 34 | 15% | 34 |
| North Dakota | 228 | 4 | 23% | 9 | 283 | 1 | 36% | 3 |
| Ohio | 217 | 21 | 17% | 19 | 267 | 18 | 22% | 22 |
| Oklahoma | 219 | 19 | 14% | 27 | 267 | 18 | 21% | 23 |
| Pennsylvania | 223 | 12 | 23% | 9 | 271 | 14 | 26% | 13 |
| Rhode Island | 214 | 26 | 14% | 27 | 265 | 23 | 20% | 25 |
| South Carolina | 211 | 34 | 13% | 30 | 260 | 29 | 18% | 28 |
| Tennessee | 209 | 36 | 10% | 37 | 258 | 34 | 15% | 34 |
| Texas | 217 | 21 | 16% | 22 | 264 | 25 | 21% | 23 |
| Utah | 223 | 12 | 20% | 12 | 274 | 8 | 27% | 11 |
| Virginia | 220 | 15 | 19% | 13 | 267 | 18 | 23% | 20 |
| West Virginia | 214 | 26 | 13% | 30 | 258 | 34 | 13% | 37 |
| Wisconsin | 228 | 4 | 25% | 5 | 277 | 6 | 32% | 4 |
| Wyoming | 224 | 10 | 19% | 13 | 274 | 8 | 26% | 13 |

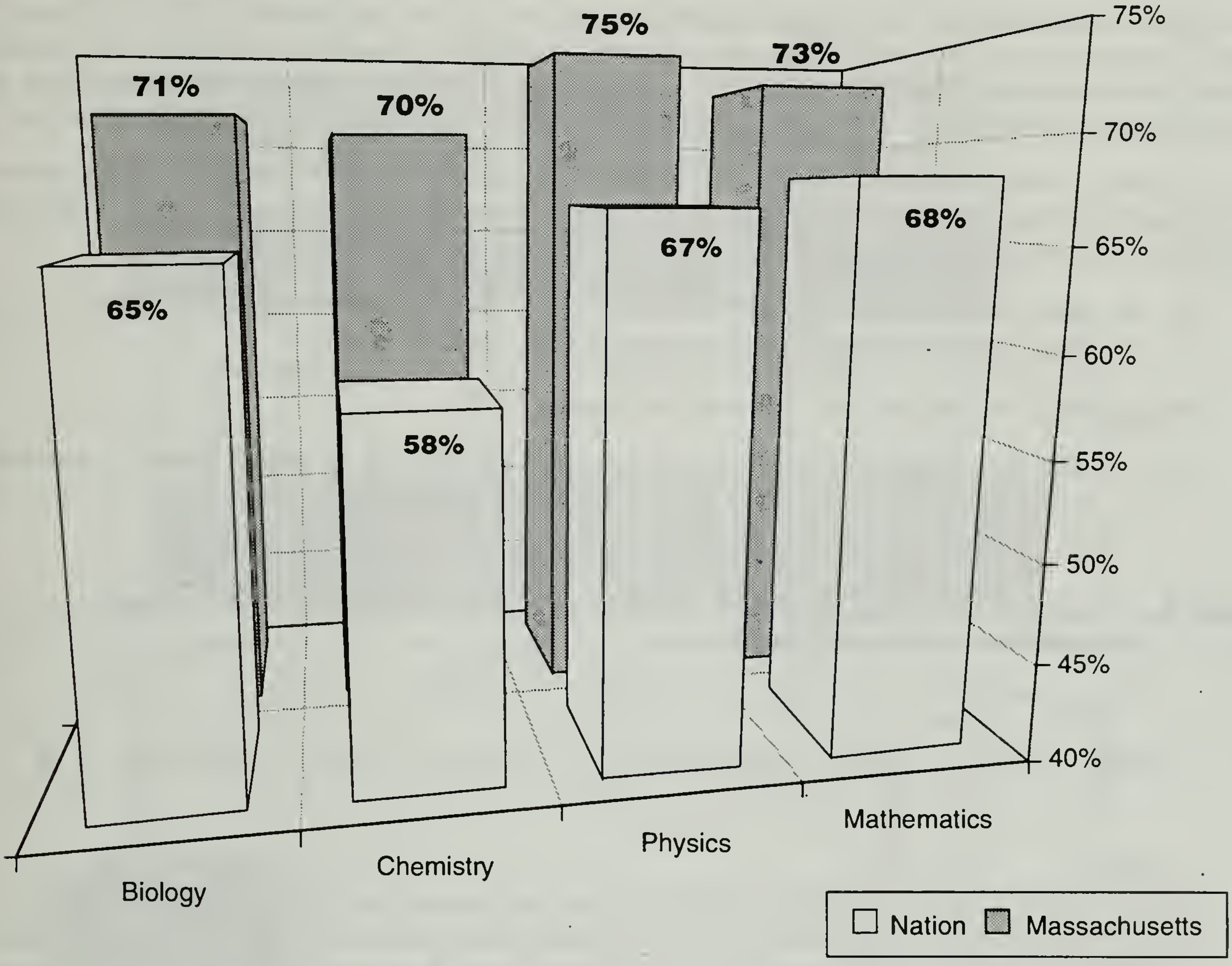
*Source: 1992 NAEP Mathematics Report Card for the Nation and the States*

### Topic: Advanced placement results in mathematics and science

Advanced placement examinations provide a fair measure of high levels of student achievement. In Massachusetts, there are higher percentages of students taking AP math and science courses -- and a higher percentage passing these examinations,

## Direct Measure of Progress Toward the National Education Goals: Advanced Placement Scores in Math & Science

**Chart 4B. Passing rates on Advanced Placement examinations in Math and Science subjects. 1992; Comparison of Massachusetts and the Nation**



**Topic: MEAP scores in mathematics and science.**

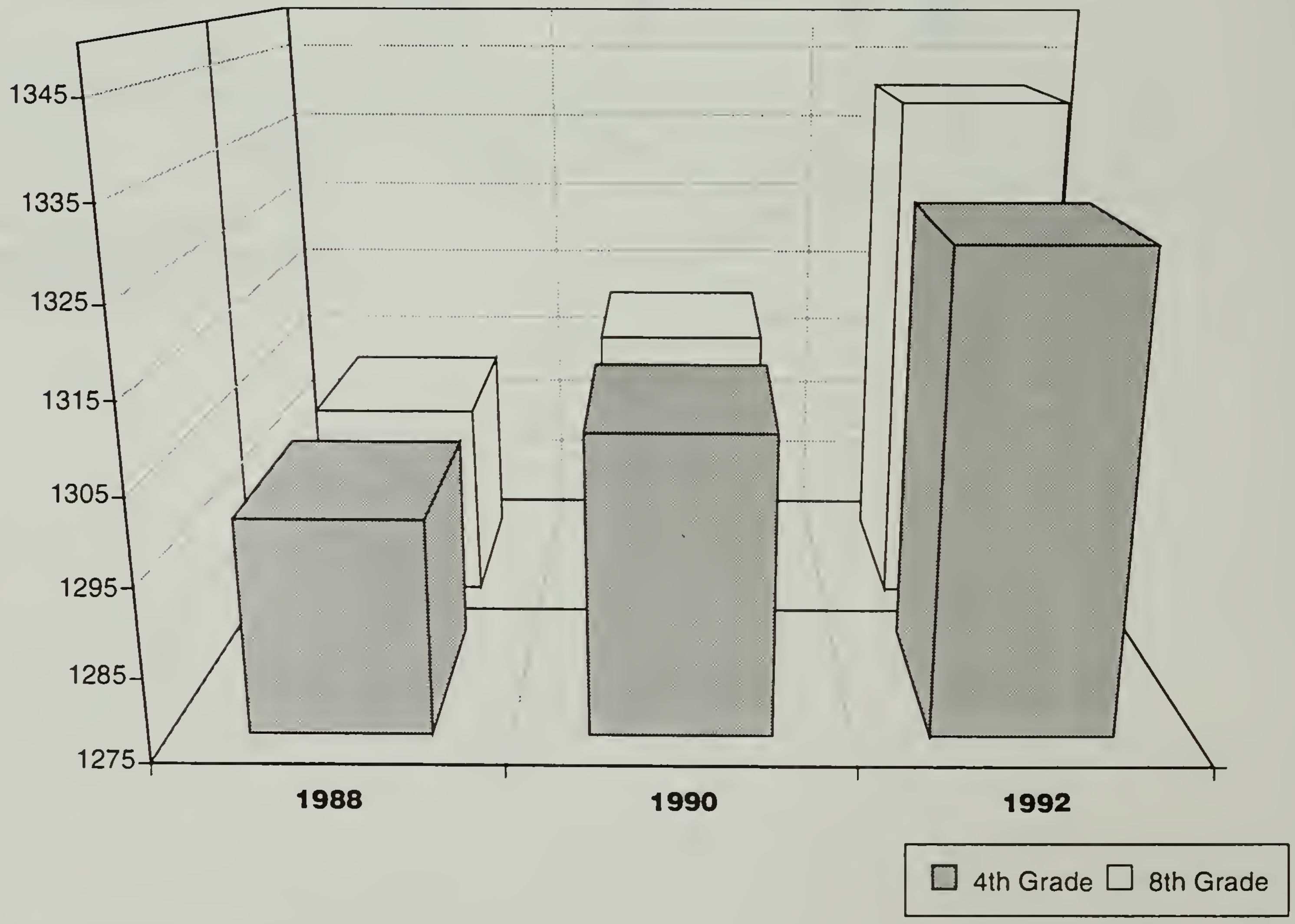
Since 1988, the Massachusetts Educational Assessment Program (MEAP) has assessed the performance of students in fourth, eighth and twelfth grades every other year. Part of a 1985 educational reform bill, known as Chapter 188, these assessments provide a useful means to assess the progress of student achievement within a district, as well as a means to compare the performance of districts.

Originally these assessments were coupled with another student assessment called the Basic Skills Test. In concept, the Basic Skills Test was supposed to assess and report a minimum level of reading, writing and mathematical skills. However, the test and the standard for passage were set so low as to render the test meaningless. The test was suspended in 1991 and has not been given since that time.

In contrast, the MEAP assessment has provided state and local policymakers with a clear view of how schools and districts are doing. The standard for performance is relatively high so that a determiniation of proficiency in a subject area is meaningful.

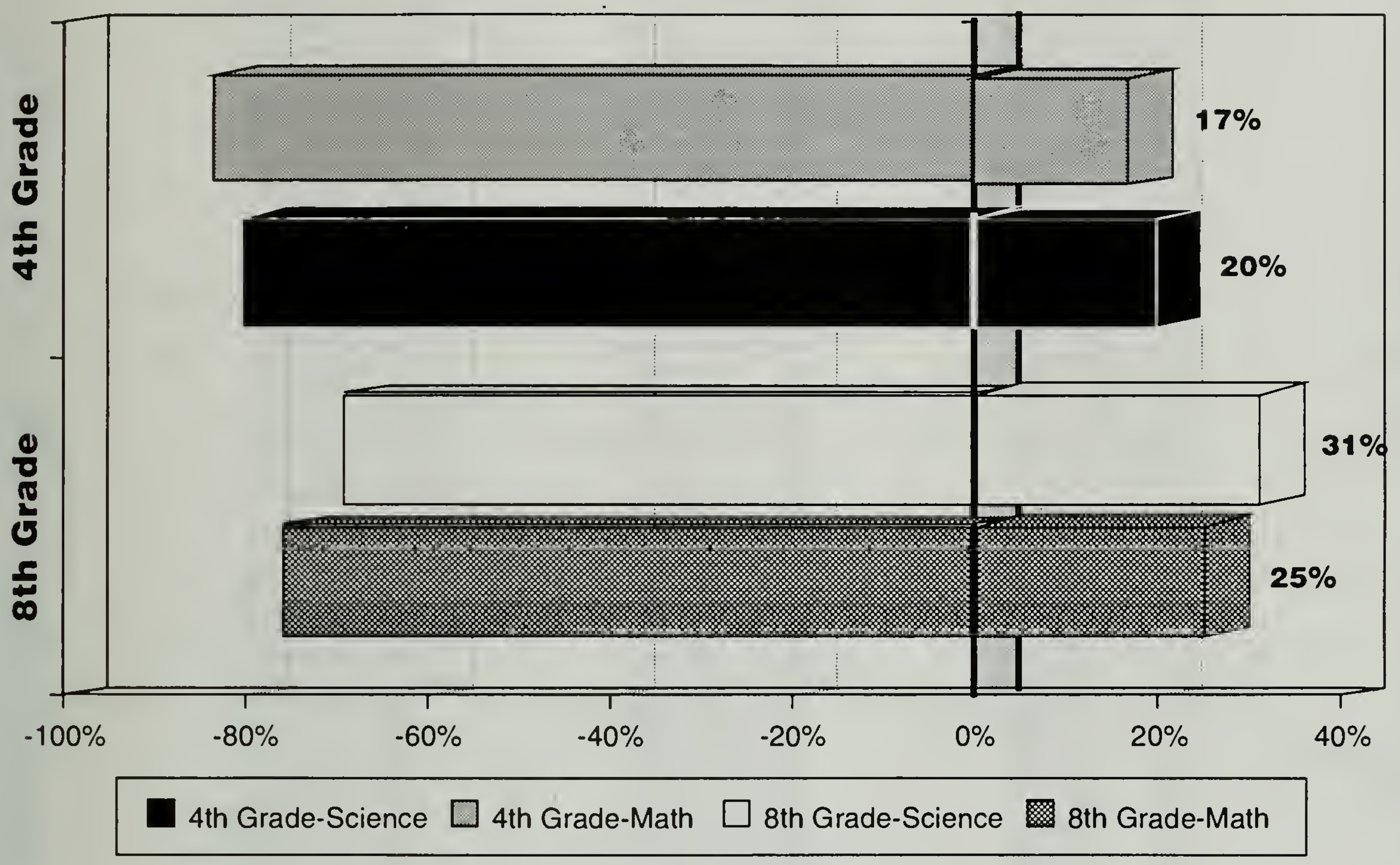
- In 1988, the statewide average score was set at 1300 in mathematics and science for both fourth and eighth grades, within a range of 1000-1600 for districts.
- In 1990, the average had increased slightly, to 1310.
- In 1992, the average increased again, although the average for eighth graders increased to a level of 1340, while the average for fourth grade students increased to 1330.

**Chart 4C. Statewide average on MEAP assessments for mathematics and science: 4th and 8th grades. 1988-92.**



## Additional Information to Evaluate Improvement in Education: State Assessments in Math and Science

**Chart 4D. Statewide average on MEAP proficiency scores for mathematics and science: 4th and 8th grades. 1992.**



- In 1992, the MEAP assessments were reported in a slightly different fashion. While the aggregate scores were reported to districts, the proficiency level performance of students was also reported. These scores provided a clear view of student achievement. These scores, coupled with other indicators of student performance, provided a clear rationale for the Education Reform Act.

## Topic: Proficiency in mathematics. 1992 MEAP results

### Table 4.1. MEAP Proficiency scores in mathematics for 4th grade students. 1992

| District | PCT | District | PCT | District | PCT | District | PCT |
|---|---|---|---|---|---|---|---|
| Rowe | 53% | Berlin | 24% | Old Rochester | 19% | Gateway | 13% |
| Carlisle | 49% | Boylston | 24% | Hopedale | 18% | Hawlemont | 13% |
| Shirley | 48% | Brewster | 24% | Hopkinton | 18% | Quaboag Regional | 13% |
| Needham | 44% | Douglas | 24% | North Andover | 18% | Hanson | 13% |
| Newton | 44% | Eastham | 24% | Uxbridge | 18% | Amesbury | 12% |
| Weston | 42% | Foxborough | 24% | Walpole | 18% | Clarksburg | 12% |
| Winchester | 42% | Newburyport | 24% | Berkshire Hills | 18% | Florida | 12% |
| Lexington | 41% | Norfolk | 24% | Blackstone Millville | 18% | Ludlow | 12% |
| Acton | 39% | Orleans | 24% | Pioneer Valley | 18% | Malden | 12% |
| Lincoln | 39% | Wellfleet | 24% | Abington | 17% | Nahant | 12% |
| Bolton | 38% | Chesterfield Goshen | 24% | Billerica | 17% | Norton | 12% |
| Stow | 38% | Nauset | 24% | Bourne | 17% | Savoy | 12% |
| Provincetown | 37% | Beverly | 23% | Georgetown | 17% | Sutton | 12% |
| Truro | 37% | Middleton | 23% | Granby | 17% | Swansea | 12% |
| Brookline | 36% | Sharon | 23% | Greenfield | 17% | Worcester | 12% |
| Hanover | 36% | Shrewsbury | 23% | Hancock | 17% | Spencer East Brookfield | 12% |
| Wayland | 36% | Westport | 23% | Lanesborough | 17% | Acushnet | 11% |
| North Reading | 35% | Bridgewater | 22% | North Attleboro | 17% | Berkley | 11% |
| Salem | 35% | Brimfield | 22% | Norwood | 17% | Gardner | 11% |
| Boxborough | 34% | Brookfield | 22% | Peabody | 17% | Holbrook | 11% |
| Concord | 34% | Chatham | 22% | Richmond | 17% | Hull | 11% |
| East Longmeadow | 34% | Chelmsford | 22% | Ashfield Plainfield | 17% | Lancaster | 11% |
| Littleton | 34% | Groveland | 22% | Dudley Charlton | 17% | Leominster | 11% |
| Natick | 34% | Hadley | 22% | Frontier | 17% | Lynn | 11% |
| Danvers | 33% | Holland | 22% | Whitman | 17% | Medford | 11% |
| Medfield | 33% | Merrimac | 22% | Attleboro | 16% | Monson | 11% |
| Wellesley | 33% | Northampton | 22% | Easton | 16% | Palmer | 11% |
| Amherst | 32% | North Brookfield | 22% | Halifax | 16% | Rockland | 11% |
| Dover | 32% | Plymouth | 22% | Kingston | 16% | Southampton | 11% |
| Pelham | 32% | Sturbridge | 22% | Mashpee | 16% | South Hadley | 11% |
| Reading | 32% | Wales | 22% | Pembroke | 16% | Westhampton | 11% |
| Sherborn | 32% | Waltham | 22% | Plainville | 16% | Williamsburg | 11% |
| Auburn | 31% | West Newbury | 22% | Plympton | 16% | Wilmington | 11% |
| Hingham | 31% | Ashburnham Westminster | 22% | West Bridgewater | 16% | Hampshire | 11% |
| Longmeadow | 31% | Pentucket | 22% | North Middlesex | 16% | Dartmouth | 10% |
| Manchester by the Sea | 31% | Tantasqua | 22% | Silver Lake | 16% | Maynard | 10% |
| Northborough | 30% | Bedford | 21% | Belchertown | 15% | Methuen | 10% |
| Southborough | 30% | Braintree | 21% | Bellingham | 15% | Randolph | 10% |
| Andover | 29% | Chilmark | 21% | Gloucester | 15% | Athol Royalston | 10% |
| Duxbury | 29% | Conway | 21% | Middleborough | 15% | Gill Montague | 10% |
| Hudson | 29% | Deerfield | 21% | Oxford | 15% | Southern Berkshire | 10% |
| Marshfield | 29% | East Bridgewater | 21% | Sandwich | 15% | Chicopee | 9% |
| Westborough | 29% | Edgartown | 21% | Seekonk | 15% | Everett | 9% |
| Hamilton Wenham | 28% | Falmouth | 21% | Somerset | 15% | Fall River | 9% |
| Arlington | 27% | Hatfield | 21% | Swampscott | 15% | North Adams | 9% |
| Boxford | 27% | Newbury | 21% | Taunton | 15% | Revere | 9% |
| Franklin | 27% | Oak Bluffs | 21% | Tewksbury | 15% | Winchendon | 9% |
| Harvard | 27% | Rowley | 21% | Tyngsborough | 15% | Ayer | 8% |
| Holliston | 27% | Salisbury | 21% | Wareham | 15% | Carver | 8% |
| Lynnfield | 27% | Scituate | 21% | Webster | 15% | Easthampton | 8% |
| Melrose | 27% | Sunderland | 21% | Wilbraham | 15% | Orange | 8% |
| Milton | 27% | Tisbury | 21% | Adams Cheshire | 15% | Petersham | 8% |
| Norwell | 27% | West Tisbury | 21% | Dighton Rehoboth | 15% | Somerville | 8% |
| Topsfield | 27% | Martha s Vineyard | 21% | New Salem Wendell | 15% | Avon | 7% |
| West Boylston | 27% | Quabbin | 21% | Cambridge | 14% | Brockton | 7% |
| Groton Dunstable | 27% | Agawam | 20% | Dedham | 14% | Clinton | 7% |
| Belmont | 26% | Barnstable | 20% | Dracut | 14% | Fitchburg | 7% |
| Ipswich | 26% | Canton | 20% | Milford | 14% | Freetown | 7% |
| Medway | 26% | Essex | 20% | Millis | 14% | Lakeville | 7% |
| Sudbury | 26% | Framingham | 20% | New Bedford | 14% | Freetown Lakeville | 7% |
| Williamstown | 26% | Grafton | 20% | Stoughton | 14% | Southwick Tolland | 7% |
| Burlington | 25% | Granville | 20% | Westfield | 14% | Boston | 6% |
| Cohasset | 25% | Hampden | 20% | Weymouth | 14% | Lee | 6% |
| Erving | 25% | Harwich | 20% | Winthrop | 14% | Lowell | 6% |
| Holden | 25% | Lenox | 20% | Woburn | 14% | Northbridge | 6% |
| Leicester | 25% | Lunenburg | 20% | Central Berkshire | 14% | Southbridge | 6% |
| Leverett | 25% | Marlborough | 20% | Dennis Yarmouth | 14% | Springfield | 6% |
| Marblehead | 25% | Marion | 19% | Ashland | 13% | Ware | 6% |
| Paxton | 25% | Mattapoisett | 19% | Fairhaven | 13% | Chelsea | 4% |
| Princeton | 25% | Raynham | 19% | Haverhill | 13% | Holyoke | 4% |
| Rutland | 25% | Rochester | 19% | Mansfield | 13% | Lawrence | 3% |
| Saugus | 25% | Rockport | 19% | Millbury | 13% | | |
| Shutesbury | 25% | Stoneham | 19% | Nantucket | 13% | | |
| Sterling | 25% | Wakefield | 19% | Pittsfield | 13% | | |
| Westford | 25% | Wrentham | 19% | Quincy | 13% | | |
| Westwood | 25% | Buckland Colrain Shelburn | 19% | Watertown | 13% | | |
| Wachusett | 25% | Narraganset | 19% | West Springfield | 13% | | |

## Additional Information to Evaluate Improvement in Education: State Assessments in Math and Science

### Table 4.2. MEAP Proficiency scores in mathematics for 8th grade students. 1992

| District | PCT |
|---|---|
| Carlisle | 70% |
| Lenox | 57% |
| Lincoln | 54% |
| Sudbury | 53% |
| Medfield | 51% |
| Hamilton Wenham | 51% |
| Lanesborough | 50% |
| Richmond | 50% |
| Acton Boxborough | 48% |
| Hopkinton | 47% |
| Lexington | 46% |
| Reading | 46% |
| West Boylston | 46% |
| Belmont | 45% |
| Harvard | 45% |
| Bolton | 44% |
| Concord | 44% |
| Sharon | 44% |
| Stow | 44% |
| Weston | 43% |
| Longmeadow | 42% |
| Northborough | 42% |
| Southborough | 42% |
| Andover | 41% |
| Shirley | 41% |
| Brookline | 40% |
| Chatham | 40% |
| Scituate | 40% |
| Bedford | 39% |
| Berkley | 39% |
| Marblehead | 39% |
| Newton | 39% |
| Wellesley | 39% |
| Westborough | 39% |
| Norwell | 38% |
| Westwood | 38% |
| Winchester | 38% |
| Hanson | 38% |
| Littleton | 36% |
| Wayland | 36% |
| Chelmsford | 35% |
| Duxbury | 35% |
| Hanover | 35% |
| Ipswich | 35% |
| Lancaster | 35% |
| Monson | 35% |
| Dover Sherborn | 35% |
| Holden | 34% |
| Leicester | 34% |
| Manchester by the Sea | 34% |
| Medway | 34% |
| Paxton | 34% |
| Pelham | 34% |
| Princeton | 34% |
| Rutland | 34% |
| Sterling | 34% |
| Wachusett | 34% |
| Watertown | 33% |
| Masconomet | 33% |
| Essex | 32% |
| Foxborough | 32% |
| Framingham | 32% |
| Hingham | 32% |
| Lunenburg | 32% |
| Lynnfield | 32% |
| Natick | 32% |
| Sutton | 32% |
| Groton Dunstable | 32% |
| Beverly | 31% |
| Cohasset | 31% |
| Edgartown | 31% |
| Georgetown | 31% |
| Oak Bluffs | 31% |
| Provincetown | 31% |
| Swampscott | 31% |
| Tisbury | 31% |
| West Tisbury | 31% |
| Berkshire Hills | 31% |
| Dighton Rehoboth | 31% |
| Hampshire | 31% |
| Martha s Vineyard | 31% |
| Arlington | 30% |
| Barnstable | 30% |
| Canton | 30% |
| Carver | 30% |
| Grafton | 30% |
| Hatfield | 30% |
| North Reading | 30% |
| Plymouth | 30% |
| Wilbraham | 30% |
| Ashbumham Westminster | 30% |
| Pentucket | 30% |
| Plymouth Carver | 30% |
| Tantasqua | 30% |
| Burlington | 29% |
| Millis | 29% |
| Needham | 29% |
| North Andover | 29% |
| Shrewsbury | 29% |
| Westford | 29% |
| Central Berkshire | 29% |
| Dennis Yarmouth | 29% |
| Ashland | 28% |
| Dedham | 28% |
| Marlborough | 28% |
| Newburyport | 28% |
| Palmer | 28% |
| South Hadley | 28% |
| Stoughton | 28% |
| North Middlesex | 28% |
| Clinton | 27% |
| Hampden | 27% |
| Holliston | 27% |
| Marshfield | 27% |
| Millbury | 27% |
| Northampton | 27% |
| Plainville | 27% |
| Sandwich | 27% |
| King Philip | 27% |
| Mount Greylock | 27% |
| Pioneer Valley | 27% |
| Southern Berkshire | 27% |
| Bellingham | 26% |
| Billerica | 26% |
| Falmouth | 26% |
| Franklin | 26% |
| Milton | 26% |
| Saugus | 26% |
| Uxbridge | 26% |
| Walpole | 26% |
| Berlin Boylston | 26% |
| Freetown Lakeville | 26% |
| Belchertown | 25% |
| Braintree | 25% |
| Bridgewater | 25% |
| Danvers | 25% |
| East Bridgewater | 25% |
| Easton | 25% |
| Granby | 25% |
| Greenfield | 25% |
| Harwich | 25% |
| Hopedale | 25% |
| Norton | 25% |
| Peabody | 25% |
| Quincy | 25% |
| Seekonk | 25% |
| Westport | 25% |
| Wilmington | 25% |
| Nauset | 25% |
| Quabbin | 25% |
| Ralph C. Mahar | 25% |
| Hadley | 24% |
| Mashpee | 24% |
| Nantucket | 24% |
| Raynham | 24% |
| Westfield | 24% |
| West Springfield | 24% |
| Gill Montague | 24% |
| Agawam | 23% |
| Bourne | 23% |
| Cambridge | 23% |
| East Longmeadow | 23% |
| Gloucester | 23% |
| Norwood | 23% |
| Rockport | 23% |
| West Bridgewater | 23% |
| Winthrop | 23% |
| Mohawk Trail | 23% |
| Spencer East Brookfield | 23% |
| Abington | 22% |
| Dartmouth | 22% |
| Hudson | 22% |
| Hull | 22% |
| Lee | 22% |
| Rochester | 22% |
| Stoneham | 22% |
| Old Rochester | 22% |
| Melrose | 21% |
| Milford | 21% |
| Northbridge | 21% |
| Pittsfield | 21% |
| Somerset | 21% |
| Tyngsborough | 21% |
| Wareham | 21% |
| Winchendon | 21% |
| Adams Cheshire | 21% |
| Blackstone Millville | 21% |
| Clarksburg | 20% |
| Florida | 20% |
| Holbrook | 20% |
| Mansfield | 20% |
| Randolph | 20% |
| Salem | 20% |
| Narraganset | 20% |
| Silver Lake | 20% |
| Southwick Tolland | 20% |
| Acushnet | 19% |
| Attleboro | 19% |
| Auburn | 19% |
| Everett | 19% |
| Gardner | 19% |
| Medford | 19% |
| North Attleboro | 19% |
| Revere | 19% |
| Rockland | 19% |
| Somerville | 19% |
| Sunderland | 19% |
| Weymouth | 19% |
| Dudley Charlton | 19% |
| Gateway | 19% |
| Triton | 19% |
| Avon | 18% |
| Ayer | 18% |
| Haverhill | 18% |
| Leominster | 18% |
| North Brookfield | 18% |
| Southbridge | 18% |
| Taunton | 18% |
| Tewksbury | 18% |
| Waltham | 18% |
| Amesbury | 17% |
| Brockton | 17% |
| Swansea | 17% |
| Wakefield | 17% |
| Quaboag Regional | 17% |
| Whitman | 17% |
| Chicopee | 16% |
| Easthampton | 16% |
| Middleborough | 16% |
| North Adams | 16% |
| Springfield | 16% |
| Worcester | 16% |
| Athol Royalston | 16% |
| Douglas | 15% |
| Dracut | 15% |
| Fitchburg | 15% |
| Ludlow | 15% |
| Methuen | 15% |
| Oxford | 15% |
| Frontier | 15% |
| Holyoke | 14% |
| Fall River | 13% |
| Lowell | 13% |
| Malden | 13% |
| Webster | 13% |
| Boston | 12% |
| Fairhaven | 12% |
| Ware | 12% |
| Woburn | 12% |
| Granville | 11% |
| New Bedford | 11% |
| Lynn | 10% |
| Maynard | 10% |
| Lawrence | 7% |
| Chelsea | 5% |

## Topic: Proficiency in science. 1992 MEAP results

### Table 4.3. MEAP Proficiency scores in science for 4th grade students. 1992

| District | PCT |
|---|---|
| Medfield | 46% |
| Needham | 44% |
| Provincetown | 44% |
| Truro | 44% |
| Acton | 42% |
| Boxborough | 42% |
| Wellesley | 42% |
| Dover | 40% |
| Rowe | 40% |
| Sherborn | 40% |
| Carlisle | 39% |
| Bolton | 38% |
| Newton | 38% |
| North Brookfield | 38% |
| Shirley | 38% |
| Stow | 38% |
| Winchester | 38% |
| Chatham | 37% |
| East Longmeadow | 37% |
| Ashfield Plainfield | 37% |
| Longmeadow | 36% |
| Milton | 36% |
| Norwell | 36% |
| Westwood | 36% |
| Hancock | 35% |
| Lanesborough | 35% |
| Newburyport | 35% |
| Northborough | 35% |
| North Reading | 35% |
| Richmond | 35% |
| Southborough | 35% |
| Auburn | 34% |
| Brookline | 34% |
| Lexington | 34% |
| Scituate | 34% |
| Andover | 33% |
| Belmont | 33% |
| Falmouth | 33% |
| Natick | 33% |
| Sudbury | 33% |
| Danvers | 32% |
| Hopedale | 32% |
| Arlington | 31% |
| Boxford | 31% |
| Douglas | 31% |
| Duxbury | 31% |
| Franklin | 31% |
| Holden | 31% |
| Norfolk | 31% |
| North Andover | 31% |
| Paxton | 31% |
| Princeton | 31% |
| Reading | 31% |
| Rutland | 31% |
| Sterling | 31% |
| Topsfield | 31% |
| Weston | 31% |
| Narraganset | 31% |
| Wachusett | 31% |
| Amherst | 30% |
| Bedford | 30% |
| Canton | 30% |
| Concord | 30% |
| Hingham | 30% |
| Lynnfield | 30% |
| Melrose | 30% |
| Pelham | 30% |
| Plainville | 30% |
| Salem | 30% |
| Berlin | 29% |
| Boylston | 29% |
| Grafton | 29% |
| Hatfield | 29% |
| Hamilton Wenham | 29% |
| Hanson | 29% |
| Hanover | 28% |
| Wakefield | 28% |
| Wilbraham | 28% |
| Chesterfield Goshen | 28% |
| Billerica | 27% |
| Brewster | 27% |
| Eastham | 27% |
| Lincoln | 27% |
| Middleton | 27% |
| Orleans | 27% |
| Plymouth | 27% |
| Rockport | 27% |
| Shrewsbury | 27% |
| Wellfleet | 27% |
| Westford | 27% |
| Nauset | 27% |
| Groton Dunstable | 27% |
| Southwick Tolland | 27% |
| Beverly | 26% |
| Hadley | 26% |
| Holliston | 26% |
| Littleton | 26% |
| Swampscott | 26% |
| Buckland Colrain Shelbum | 26% |
| Agawam | 25% |
| Barnstable | 25% |
| Bellingham | 25% |
| Erving | 25% |
| Foxborough | 25% |
| Leverett | 25% |
| Pittsfield | 25% |
| Shutesbury | 25% |
| Westborough | 25% |
| Westport | 25% |
| Ashbumham Westminster | 25% |
| Blackstone Millville | 25% |
| Chilmark | 24% |
| Edgartown | 24% |
| Groveland | 24% |
| Ipswich | 24% |
| Marion | 24% |
| Marshfield | 24% |
| Mattapoisett | 24% |
| Merrimac | 24% |
| Millis | 24% |
| Norwood | 24% |
| Oak Bluffs | 24% |
| Rochester | 24% |
| Tisbury | 24% |
| West Boylston | 24% |
| West Newbury | 24% |
| West Tisbury | 24% |
| Martha s Vineyard | 24% |
| Old Rochester | 24% |
| Pentucket | 24% |
| Carver | 23% |
| Chelmsford | 23% |
| Dracut | 23% |
| Greenfield | 23% |
| Williamstown | 23% |
| Braintree | 22% |
| Burlington | 22% |
| East Bridgewater | 22% |
| Framingham | 22% |
| Hampden | 22% |
| Hull | 22% |
| Marblehead | 22% |
| Medway | 22% |
| Cohasset | 21% |
| Harwich | 21% |
| Mansfield | 21% |
| Nantucket | 21% |
| Newbury | 21% |
| North Attleboro | 21% |
| Rowley | 21% |
| Salisbury | 21% |
| Saugus | 21% |
| Southampton | 21% |
| Stoughton | 21% |
| Sturbridge | 21% |
| Taunton | 21% |
| Tyngsborough | 21% |
| Uxbridge | 21% |
| Wayland | 21% |
| Webster | 21% |
| Westhampton | 21% |
| Williamsburg | 21% |
| Hampshire | 21% |
| Hawlemont | 21% |
| Ashland | 20% |
| Brimfield | 20% |
| Brookfield | 20% |
| Dedham | 20% |
| Deerfield | 20% |
| Essex | 20% |
| Gloucester | 20% |
| Granville | 20% |
| Haverhill | 20% |
| Holland | 20% |
| Manchester by the Sea | 20% |
| Wales | 20% |
| Waltham | 20% |
| Westfield | 20% |
| Dighton Rehoboth | 20% |
| Tantasqua | 20% |
| Abington | 19% |
| Fairhaven | 19% |
| Halifax | 19% |
| Hudson | 19% |
| Kingston | 19% |
| Marlborough | 19% |
| North Adams | 19% |
| Northampton | 19% |
| Plympton | 19% |
| Raynham | 19% |
| Sharon | 19% |
| South Hadley | 19% |
| Swansea | 19% |
| Dudley Charlton | 19% |
| Quabbin | 19% |
| Silver Lake | 19% |
| Attleboro | 18% |
| Berkley | 18% |
| Quincy | 18% |
| Sandwich | 18% |
| Somerset | 18% |
| Pioneer Valley | 18% |
| Bridgewater | 17% |
| Easton | 17% |
| Mashpee | 17% |
| Maynard | 17% |
| Monson | 17% |
| Norton | 17% |
| Peabody | 17% |
| Wareham | 17% |
| Wilmington | 17% |
| Wrentham | 17% |
| Adams Cheshire | 17% |
| Berkshire Hills | 17% |
| Southern Berkshire | 17% |
| Belchertown | 16% |
| Bourne | 16% |
| Easthampton | 16% |
| Methuen | 16% |
| Middleborough | 16% |
| Millbury | 16% |
| Pembroke | 16% |
| Tewksbury | 16% |
| Walpole | 16% |
| Weymouth | 16% |
| Winchendon | 16% |
| Woburn | 16% |
| Athol Royalston | 16% |
| Acushnet | 15% |
| Dartmouth | 15% |
| Harvard | 15% |
| Hopkinton | 15% |
| Lancaster | 15% |
| Medford | 15% |
| Palmer | 15% |
| Randolph | 15% |
| Stoneham | 15% |
| Watertown | 15% |
| West Bridgewater | 15% |
| Dennis Yarmouth | 15% |
| Gill Montague | 15% |
| North Middlesex | 15% |
| Spencer East Brookfield | 15% |
| Cambridge | 14% |
| Conway | 14% |
| Leominster | 14% |
| Malden | 14% |
| Orange | 14% |
| Petersham | 14% |
| Seekonk | 14% |
| Sunderland | 14% |
| Worcester | 14% |
| Central Berkshire | 14% |
| Gateway | 14% |
| Clinton | 13% |
| Freetown | 13% |
| Georgetown | 13% |
| Lakeville | 13% |
| Leicester | 13% |
| Milford | 13% |
| Northbridge | 13% |
| Freetown Lakeville | 13% |
| Amesbury | 12% |
| Gardner | 12% |
| Granby | 12% |
| Ludlow | 12% |
| New Bedford | 12% |
| Rockland | 12% |
| Winthrop | 12% |
| Frontier | 12% |
| Whitman | 12% |
| Avon | 11% |
| Ayer | 11% |
| Fall River | 11% |
| Fitchburg | 11% |
| Lee | 11% |
| West Springfield | 11% |
| Chicopee | 10% |
| Everett | 10% |
| Lunenburg | 10% |
| Lynn | 10% |
| Sutton | 10% |
| Lenox | 9% |
| Nahant | 9% |
| Somerville | 9% |
| Ware | 9% |
| Quaboag Regional | 9% |
| Brockton | 8% |
| Clarksburg | 8% |
| Florida | 8% |
| Oxford | 8% |
| Savoy | 8% |
| Springfield | 8% |
| Holbrook | 7% |
| Lowell | 7% |
| Revere | 7% |
| Southbridge | 7% |
| Boston | 5% |
| Lawrence | 5% |
| Holyoke | 4% |
| Chelsea | 3% |
| New Salem Wendell | 0% |

## Additional Information to Evaluate Improvement in Education: State Assessments in Math and Science

### Table 4.4. MEAP Proficiency scores in science for 8th grade students. 1992

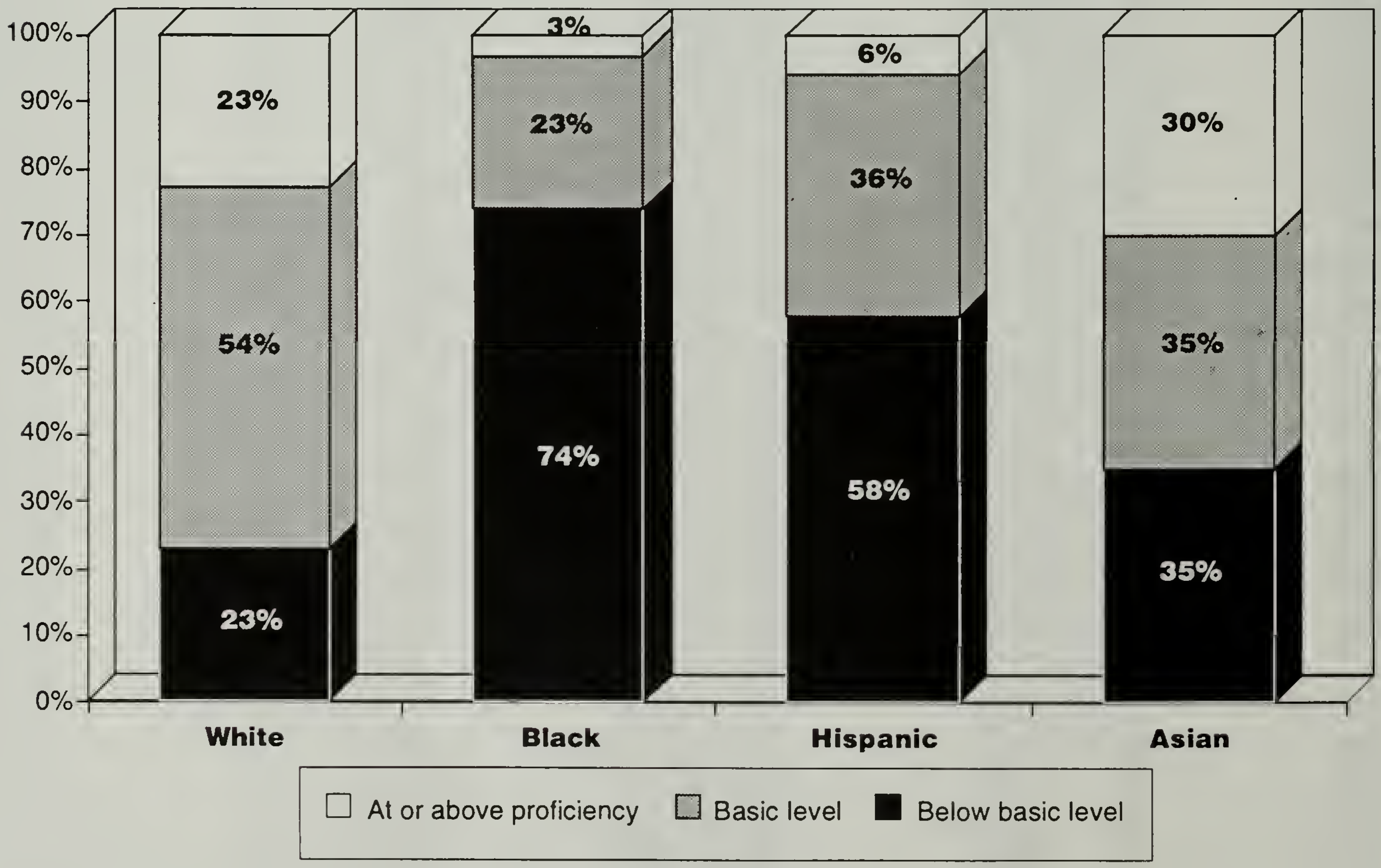
| District | PCT |
|---|---|
| Carlisle | 70% |
| Lenox | 57% |
| Lincoln | 54% |
| Sudbury | 53% |
| Medfield | 51% |
| Hamilton Wenham | 51% |
| Lanesborough | 50% |
| Richmond | 50% |
| Acton Boxborough | 48% |
| Hopkinton | 47% |
| Lexington | 46% |
| Reading | 46% |
| West Boylston | 46% |
| Belmont | 45% |
| Harvard | 45% |
| Bolton | 44% |
| Concord | 44% |
| Sharon | 44% |
| Stow | 44% |
| Weston | 43% |
| Longmeadow | 42% |
| Northborough | 42% |
| Southborough | 42% |
| Andover | 41% |
| Shirley | 41% |
| Brookline | 40% |
| Chatham | 40% |
| Scituate | 40% |
| Bedford | 39% |
| Berkley | 39% |
| Marblehead | 39% |
| Newton | 39% |
| Wellesley | 39% |
| Westborough | 39% |
| Norwell | 38% |
| Westwood | 38% |
| Winchester | 38% |
| Hanson | 38% |
| Littleton | 36% |
| Wayland | 36% |
| Chelmsford | 35% |
| Duxbury | 35% |
| Hanover | 35% |
| Ipswich | 35% |
| Lancaster | 35% |
| Monson | 35% |
| Dover Sherborn | 35% |
| Holden | 34% |
| Leicester | 34% |
| Manchester by the Sea | 34% |
| Medway | 34% |
| Paxton | 34% |
| Pelham | 34% |
| Princeton | 34% |
| Rutland | 34% |
| Sterling | 34% |
| Wachusett | 34% |
| Watertown | 33% |
| Masconomet | 33% |
| Essex | 32% |
| Foxborough | 32% |
| Framingham | 32% |
| Hingham | 32% |
| Lunenburg | 32% |
| Lynnfield | 32% |
| Natick | 32% |
| Sutton | 32% |
| Groton Dunstable | 32% |
| Beverly | 31% |
| Cohasset | 31% |
| Edgartown | 31% |
| Georgetown | 31% |
| Oak Bluffs | 31% |
| Provincetown | 31% |
| Swampscott | 31% |
| Tisbury | 31% |
| West Tisbury | 31% |
| Berkshire Hills | 31% |
| Dighton Rehoboth | 31% |
| Hampshire | 31% |
| Martha s Vineyard | 31% |
| Arlington | 30% |
| Barnstable | 30% |
| Canton | 30% |
| Carver | 30% |
| Grafton | 30% |
| Hatfield | 30% |
| North Reading | 30% |
| Plymouth | 30% |
| Wilbraham | 30% |
| Ashburnham Westminster | 30% |
| Pentucket | 30% |
| Plymouth Carver | 30% |
| Tantasqua | 30% |
| Burlington | 29% |
| Millis | 29% |
| Needham | 29% |
| North Andover | 29% |
| Shrewsbury | 29% |
| Westford | 29% |
| Central Berkshire | 29% |
| Dennis Yarmouth | 29% |
| Ashland | 28% |
| Dedham | 28% |
| Marlborough | 28% |
| Newburyport | 28% |
| Palmer | 28% |
| South Hadley | 28% |
| Stoughton | 28% |
| North Middlesex | 28% |
| Clinton | 27% |
| Hampden | 27% |
| Holliston | 27% |
| Marshfield | 27% |
| Millbury | 27% |
| Northampton | 27% |
| Plainville | 27% |
| Sandwich | 27% |
| King Philip | 27% |
| Mount Greylock | 27% |
| Pioneer Valley | 27% |
| Southern Berkshire | 27% |
| Bellingham | 26% |
| Billerica | 26% |
| Falmouth | 26% |
| Franklin | 26% |
| Milton | 26% |
| Saugus | 26% |
| Uxbridge | 26% |
| Walpole | 26% |
| Berlin Boylston | 26% |
| Freetown Lakeville | 26% |
| Belchertown | 25% |
| Braintree | 25% |
| Bridgewater | 25% |
| Danvers | 25% |
| East Bridgewater | 25% |
| Easton | 25% |
| Granby | 25% |
| Greenfield | 25% |
| Harwich | 25% |
| Hopedale | 25% |
| Norton | 25% |
| Peabody | 25% |
| Quincy | 25% |
| Seekonk | 25% |
| Westport | 25% |
| Wilmington | 25% |
| Nauset | 25% |
| Quabbin | 25% |
| Ralph C. Mahar | 25% |
| Hadley | 24% |
| Mashpee | 24% |
| Nantucket | 24% |
| Raynham | 24% |
| Westfield | 24% |
| West Springfield | 24% |
| Gill Montague | 24% |
| Agawam | 23% |
| Bourne | 23% |
| Cambridge | 23% |
| East Longmeadow | 23% |
| Gloucester | 23% |
| Norwood | 23% |
| Rockport | 23% |
| West Bridgewater | 23% |
| Winthrop | 23% |
| Mohawk Trail | 23% |
| Spencer East Brookfield | 23% |
| Abington | 22% |
| Dartmouth | 22% |
| Hudson | 22% |
| Hull | 22% |
| Lee | 22% |
| Rochester | 22% |
| Stoneham | 22% |
| Old Rochester | 22% |
| Melrose | 21% |
| Milford | 21% |
| Northbridge | 21% |
| Pittsfield | 21% |
| Somerset | 21% |
| Tyngsborough | 21% |
| Wareham | 21% |
| Winchendon | 21% |
| Adams Cheshire | 21% |
| Blackstone Millville | 21% |
| Clarksburg | 20% |
| Florida | 20% |
| Holbrook | 20% |
| Mansfield | 20% |
| Randolph | 20% |
| Salem | 20% |
| Narraganset | 20% |
| Silver Lake | 20% |
| Southwick Tolland | 20% |
| Acushnet | 19% |
| Attleboro | 19% |
| Auburn | 19% |
| Everett | 19% |
| Gardner | 19% |
| Medford | 19% |
| North Attleboro | 19% |
| Revere | 19% |
| Rockland | 19% |
| Somerville | 19% |
| Sunderland | 19% |
| Weymouth | 19% |
| Dudley Charlton | 19% |
| Gateway | 19% |
| Triton | 19% |
| Avon | 18% |
| Ayer | 18% |
| Haverhill | 18% |
| Leominster | 18% |
| North Brookfield | 18% |
| Southbridge | 18% |
| Taunton | 18% |
| Tewksbury | 18% |
| Waltham | 18% |
| Amesbury | 17% |
| Brockton | 17% |
| Swansea | 17% |
| Wakefield | 17% |
| Quaboag Regional | 17% |
| Whitman | 17% |
| Chicopee | 16% |
| Easthampton | 16% |
| Middleborough | 16% |
| North Adams | 16% |
| Springfield | 16% |
| Worcester | 16% |
| Athol Royalston | 16% |
| Douglas | 15% |
| Dracut | 15% |
| Fitchburg | 15% |
| Ludlow | 15% |
| Methuen | 15% |
| Oxford | 15% |
| Frontier | 15% |
| Holyoke | 14% |
| Fall River | 13% |
| Lowell | 13% |
| Malden | 13% |
| Webster | 13% |
| Boston | 12% |
| Fairhaven | 12% |
| Ware | 12% |
| Woburn | 12% |
| Granville | 11% |
| New Bedford | 11% |
| Lynn | 10% |
| Maynard | 10% |
| Lawrence | 7% |
| Chelsea | 5% |

## Topic: Proficiencies in mathematics by race/ethnicity

While the performance by Massachusetts' students as measured by the MEAP proficiency assessments is not good, the resolution of this issue becomes more complex when an analysis of scores is undertaken by race and ethnicity.

- In 1992, 24% of Massachusetts fourth graders demonstrated proficiency in mathematics. A slightly larger number of white fourth graders (23%) achieve this level of proficiency. The same number of white fourth graders (23%) were performing *below* a basic level of understanding of mathematics.
- Thirty percent of Asian fourth graders were performing at or above a proficient level, the highest level among the different groupings of students. However, over a third of Asian fourth grade students (35%) were below the basic level of understanding.
- Only 6% of the Hispanic fourth grade students were achieving at a proficient level in mathematics, while over half (58%) of Hispanic fourth graders were below the basic level.
- Three percent of the African-American fourth grade students were performing at a level of proficiency in mathematics. Even more disturbing is the fact that 74% of African-American fourth graders are below the basic level of performance in 4th grade mathematics.

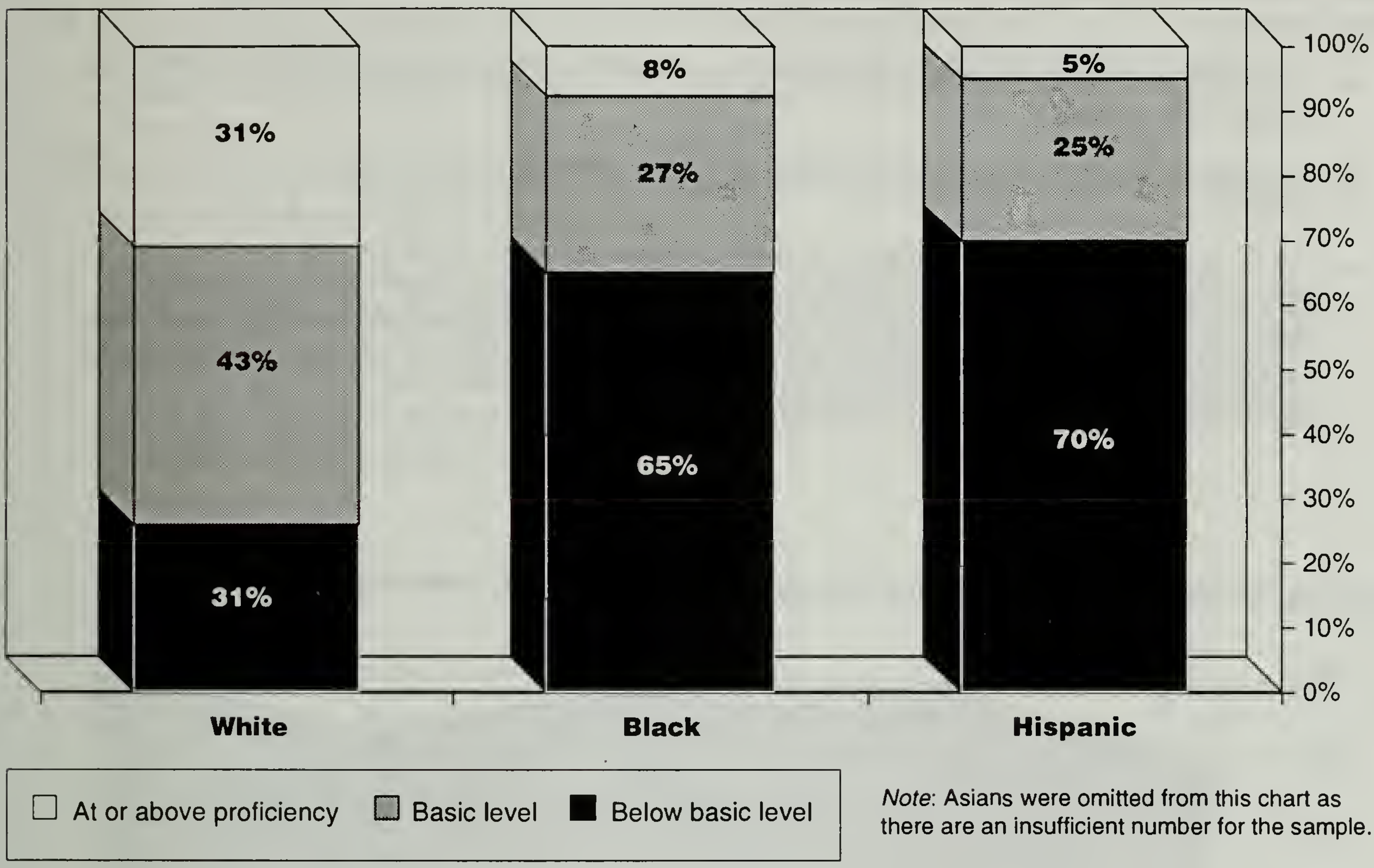
**Chart 4E. Proficiencies in Mathematics for Massachusetts' 4th Graders: By race/ethnicity**



*Source: NAEP Mathematics Report Card for the Nation and the States*

## Additional Important Information to Evaluate Improvement in Education: Math Assessments by Race or Ethnicity

**Chart 4F. Proficiencies in Mathematics for Massachusetts 8th Graders: By race/ethnicity**



*Note*: Asians were omitted from this chart as there are an insufficient number for the sample.

*Source: NAEP Mathematics Report Card for the Nation and the States*

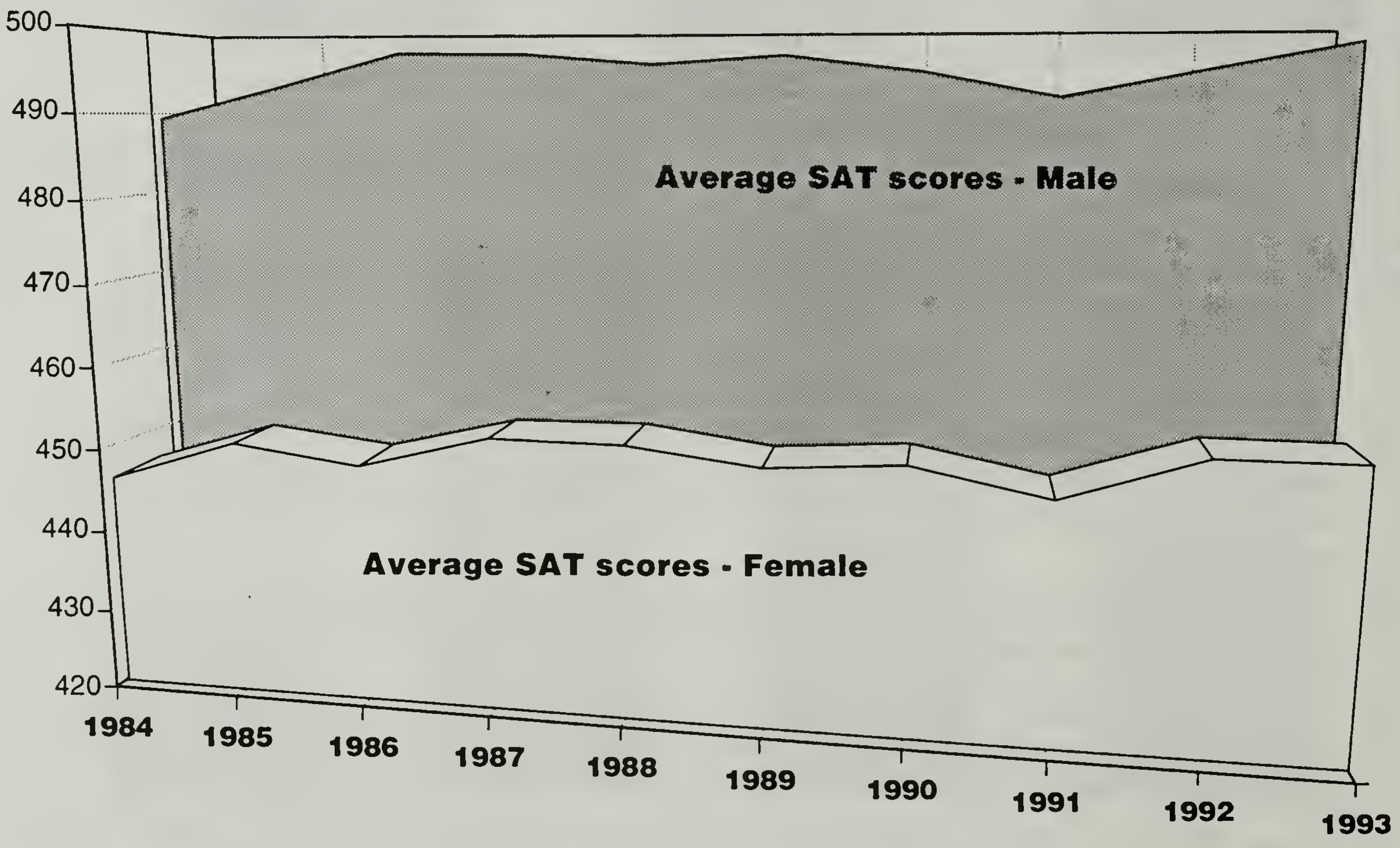
- In 1992, 28% of Massachusetts eighth graders demonstrated proficiency in mathematics. A slightly larger number of white eighth graders (31%) achieve this level of proficiency. A smaller number of white eighth graders (26%) were performing below a basic level of understanding of mathematics.
- There were not a statistically significant number of Asian eighth grade students in the pool of student assessed in 1992 so there is no data on the performance of these students.
- Only 5% of the Hispanic eighth grade students were achieving at a proficient level in mathematics. However, the number of Hispanic eighth graders achieving below the basic level of math proficiency increased sharply to 70% from the levels achieved by Hispanic fourth graders.
- Eight percent of the African-American eighth grade students were performing at a level of proficiency in mathematics. Nearly two-thirds of African-American eighth graders (65%) are below the basic level of performance in eighth grade mathematics.

### Topic: Assessment Test Scores in Mathematics by Gender

The difference in performance in mathematics by gender has been a source of significant concern for a number of years. The American Association of University Women and the Wellesley College Center for Research on Women have done considerable work to demonstrate a host of issues on how schools impact girls differently than boys. The issue of gender differences in learning is a continuing one in Massachusetts.

- The math SAT scores for boys have been approximately 40-50 points higher than for girls in the period 1984 to 1993.
- A difference in SAT scores was consistent even when analyzing the scores of the top 10% of the students.
- When comparing the gender difference between Massachusetts' students and their national peers in SAT mathematics scores, Massachusetts' girls fare better than Massachusetts' boys. Although the average SAT score for both boys and girls in Massachusetts is slightly lower than their peers, Massachusetts' girls are closer to the national average for girls than Massachusetts' boys are to the national average for boys.

**Chart 4G. Average SAT Mathematics scores for Massachusetts, 1984-1993: By gender**



## Additional Important Information to Evaluate Improvement in Education: Math Assessments by Gender

- The 1992 MEAP assessment showed a substantial difference between male and female students in their performances on the MEAP math and science scores. Further, questions posed to students on the assessment indicated a marked difference in interest in science between the genders.
- Interestingly, the 1992 NAEP assessment demonstrated no significant difference in gender on the math assessment scores in Massachusetts.
- There are gender differences in course-taking in science and mathematics as reported by students taking SAT examinations; in 1993, physics was reported to have been taken by 54% of the male students, while only 39% of the female students had taken a physics course. Nineteen percent of the males had taken calculus, while 16% of the females reported taking calculus. There is a trend of more girl students taking these high-level courses, while the figures for male students are holding steady.

## *GOAL*

# 5

# A Literate and Competitive Citizenry

Massachusetts has one of the most highly educated workforce in the United States. Almost three of every ten Massachusetts residents have completed four or more years of college. Among the fifteen most populous states in the nation, Massachusetts has the greatest percentage of residents who have college degrees. As Massachusetts meets the challenges of the global economy, it is essential that its citizens have the opportunity to advance their education and job training to meet the demands of the twenty-first century. The future of the Commonwealth s economy is in tomorrow s cutting-edge industries. Increasingly, business in Massachusetts will require a skilled workforce with sufficient post-secondary training to adapt to future technologies. For some adults, there needs to be a "second chance" afforded for them to become contributing workers. For the purposes of this report, adult education is grouped into Adult Basic Education, Adult Secondary Education.

Adult Basic Education (ABE) programs focus upon providing citizens with basic knowledge in reading, writing and mathematical skills. ABE programs aim to meet the needs of adults who left the school system early, without gaining necessary education, or recent immigrants who arrived in the state insufficiently educated.

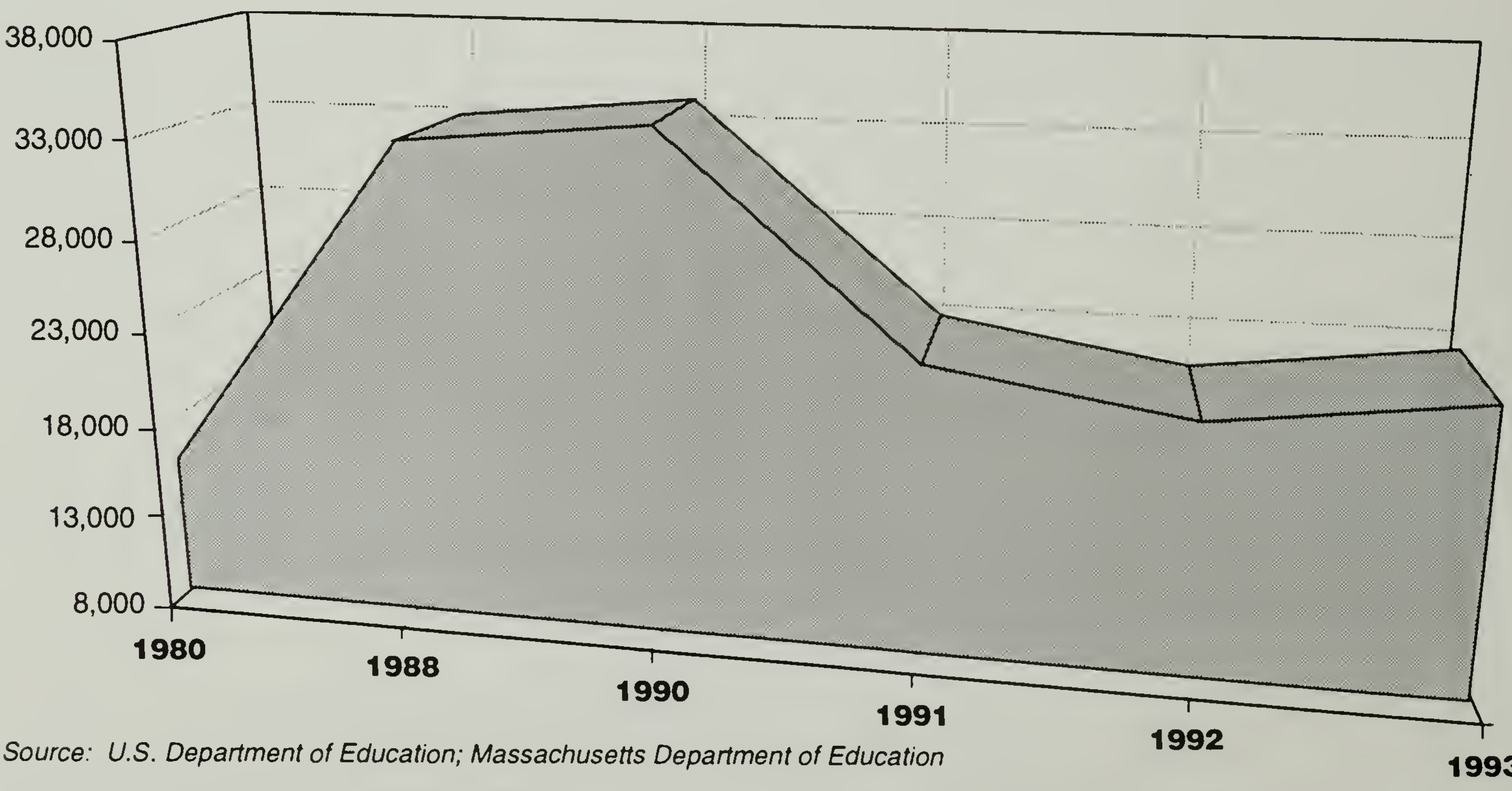
Adult Secondary Education programs are designed to provide high school completion courses to participants who never graduated high school. Participants have the opportunity to take GED examinations at various times during the year throughout the state.

## Topic: Adult Education and General Educational Development program

The national Adult Education Program began in 1965 under the Economic Opportunity Act with a funding level of $18.6 million, and the following year was established in the Office of Education under the provisions of the elementary and secondary education legislation with a funding level of $20.7 million. In Fiscal Year 1980 the funding level for the Basic State Grants portion of the Act had reached $100 million, and in Fiscal Year 1992 Congress appropriated over $235 million for state grants. Through the Basic State Grants section of the Act, Federal funds are provided to the states which, operating under approved plans, add state resources and provide instructional services for adults through local school systems, community colleges, and other public and private agencies. These services include Adult Basic Education (ABE), which is equivalent to instruction provided in grades 1-8; Adult Secondary Education (ASE), which is equivalent to instruction provided in grades 9-12, leading to a regular high school diploma or preparation for taking the GED examination; and English as a Second Language (ESL) for those individuals whose native language is not English.

- The current delivery system of adult education involves five secretariats and fourteen different state agencies.
- It is estimated that 1.4 million Massachusetts adults lack the educational foundation expected of a high school graduate or basic literacy in English. In 1992, there were more than 550,000 people served in the adult education system.
- It is estimated that there is more than $223 million in state and federal funds committed to adult education in Massachusetts. If the funds committed for vocational-technical training are included, this figure swells to $859 million.

**Chart 5.2. The number of particpants in adult basic and adult secondary programs. 1980-1993.**



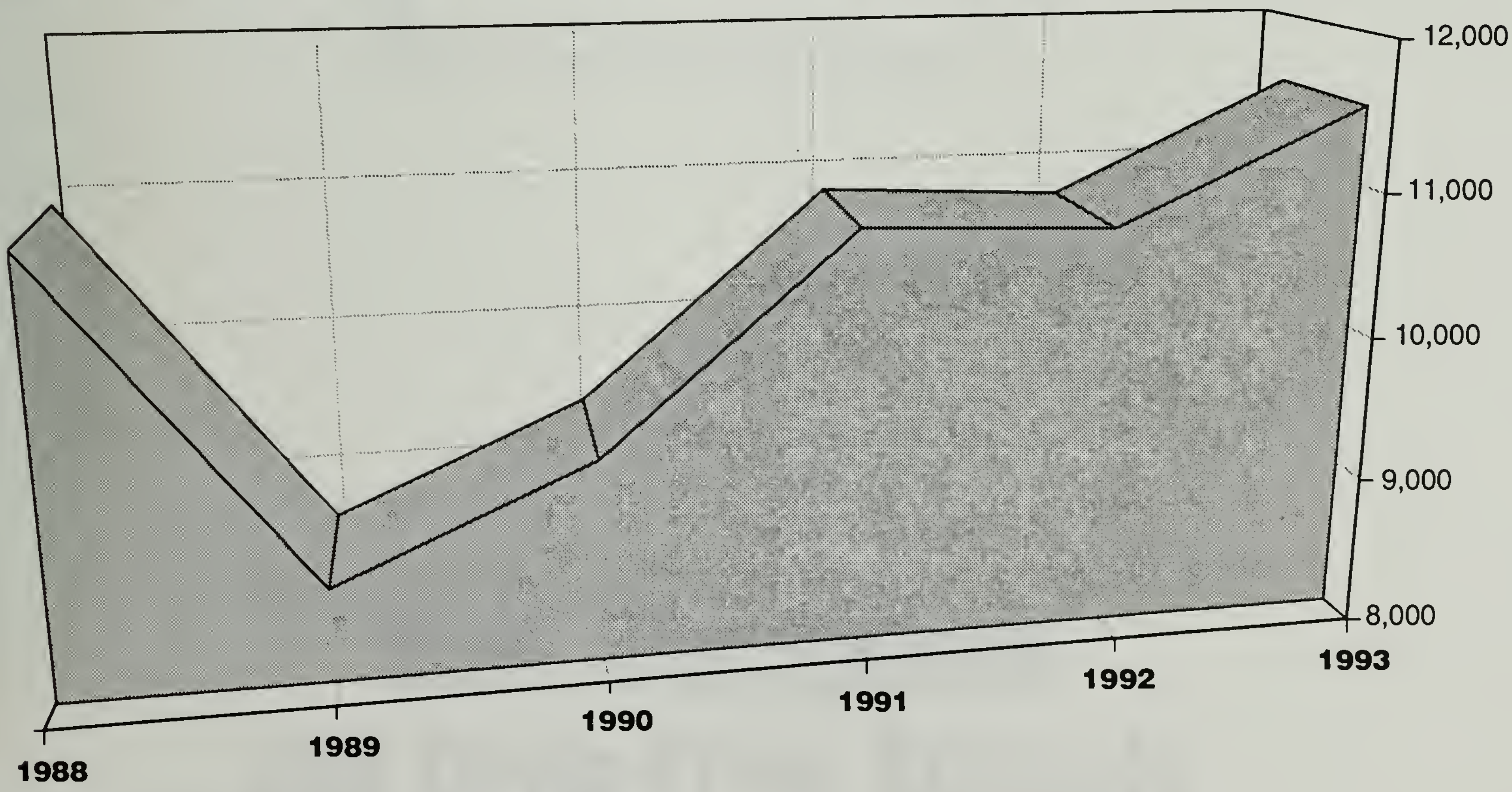
*Source: U.S. Department of Education; Massachusetts Department of Education*

## Direct Measure of Progress toward the Goal: ABE participants and GED certificates

The General Educational Development (GED) program was established in order to help adult learners -- who had not completed their high school program -- obtain some recognition of the educational development and perhaps continue their learning through institutions of higher learning. As the *Who Took the GED? GED 1993 Statistical Report* notes: "The GED tests were first developed in 1942 to provide returning World War II veterans, who had not earned a high school diploma prior to entering military service, with an opportunity to earn a high school credential Each year, more than 750,000 adults take the GED tests and about 450,000 adults obtain high school credentials based on the tests." Locally,

- 73.7% of the people met the score requirements and were awarded aGED in Massachusetts. This passage rate was slightly better than the national average of 71.5%.
- 15.4% of the test-takers in Massachusetts were 18 or younger. However, the average age for test takers in Massachusetts was 26.6 years. This is slightly older than the average nationally: 25.8 years. Curiously, the average age of those who passed the GED *increases* in Massachusetts (27.7 years), while the national average decreases slightly (25.6 years).
- 6.4% of the GED test-takers in Massachusetts cited Spanish as their first language. Nationally, the percentage was 4.2%.
- The state's GED test-takers related an average highest grade of formal education of 9.7. This was slightly below the national average grade of 9.9.

**Chart 5.3. The number of GED certificates issued in Massachusetts. 1988-1993.**



*Source: The General Educational Development Testing Service*

# *GOAL*

# *6*

# Safe, Disciplined and Drug-Free Schools

It is common sense that a child will not learn if he or she cannot focus on learning. A major impediment to learning in too many schools is the prevalence of drugs, alcohol, weapons and violence. The goal is simple: our schools should be centers of learning, free from drugs and alcohol, free from weapons and free from violence. Yet as straight forward as the goal may be, the current situation demonstrates that we have far to go to realize this mission.

As the following pages illustrate, Massachusetts students appear to be somewhat less prone to violence and carrying weapons than their peers nationally; however, it also appears that Massachusetts youth are more likely to use or consume controlled substances, such as drugs and alcohol. Somewhat confusing is the fact that students appear to be using drugs more -- but alcohol less. In addition, while Massachusetts students appear less violent than other young people in this country, there are ominous signs that there is an increasingly violent young population. One of the more distressing reports was that more than a quarter (27%) of the *middle school* principals reported that students carrying weapons was a moderate to serious problem in their schools -- while only 6% of high school principals reported such problems.

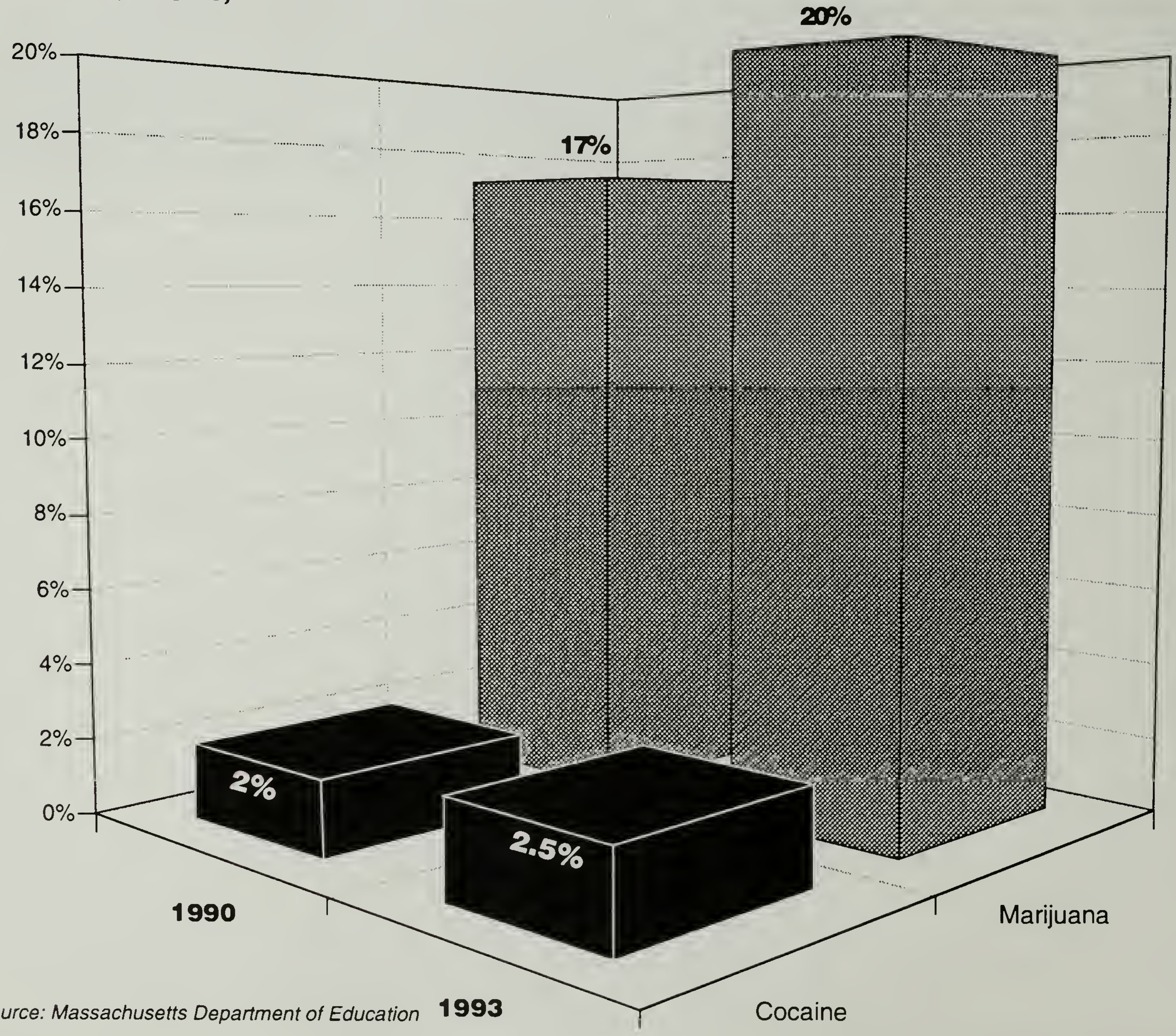
As we seek to develop the kind of education system which will meet the challenges of the next century, to insure equity, to insure access, to insure that time is spent on learning, we must establish a zero tolerance for weapons, drugs and violence in our schools. In a system where 10% of the African-American high school students and 13% of Hispanic high school students miss a day of school each month because they fear for their personal safety, the best first step to provide better educational opportunities for these students is to make schools safe.

## Topic: Usage of drugs by high school students

The usage of drugs is one of the more disturbing aspects of modern life for our nation's youth. Massachusetts students are not immune to this scourge.

- Over one-third of high school students report using marijuana in their lifetime. 20% of the students report using marijuana in the last 30 days.
- 7% of the high school students report using marijuana *on school grounds* in the last 30 days.
- 13% of students report using other drugs such as LSD or heroin. However, there is a curious racial/ethnic aspect to the usage: only 3.5% of African-American or Hispanic students reported usage, while four times (14%) the number of white students report using such drugs.

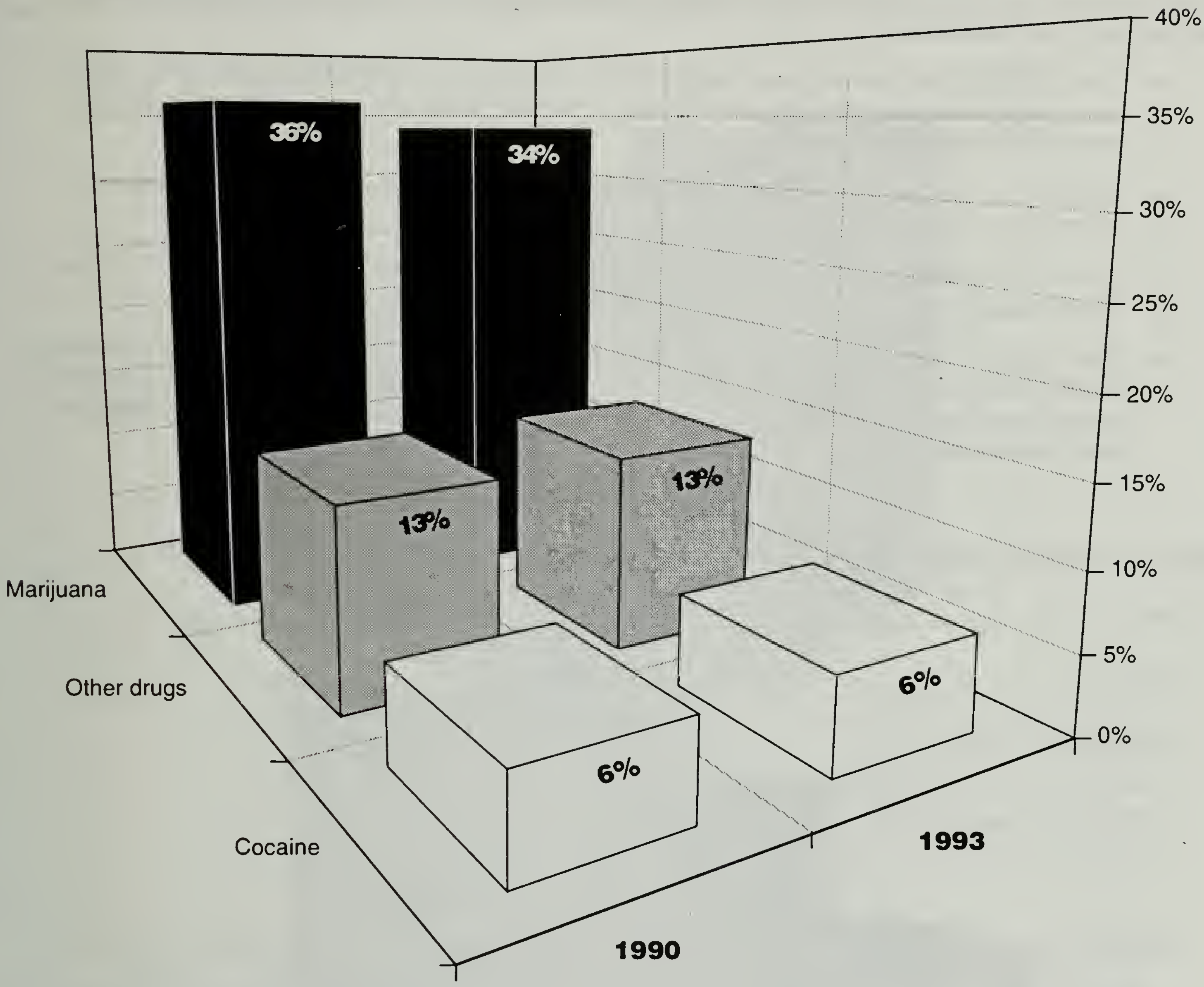
**Chart 6.1. Marijuana and Cocaine Use within Past 30 Days by Massachusetts High School Students, 1990 and 1993.**



*Source: Massachusetts Department of Education*

## Direct Measure of the Goal: Drug-free Students and Schools

**Chart 6.2. Percentages of Massachusetts High School Students who have ever used drugs, 1990 and 1993.**



*Source: Massachusetts Department of Education*

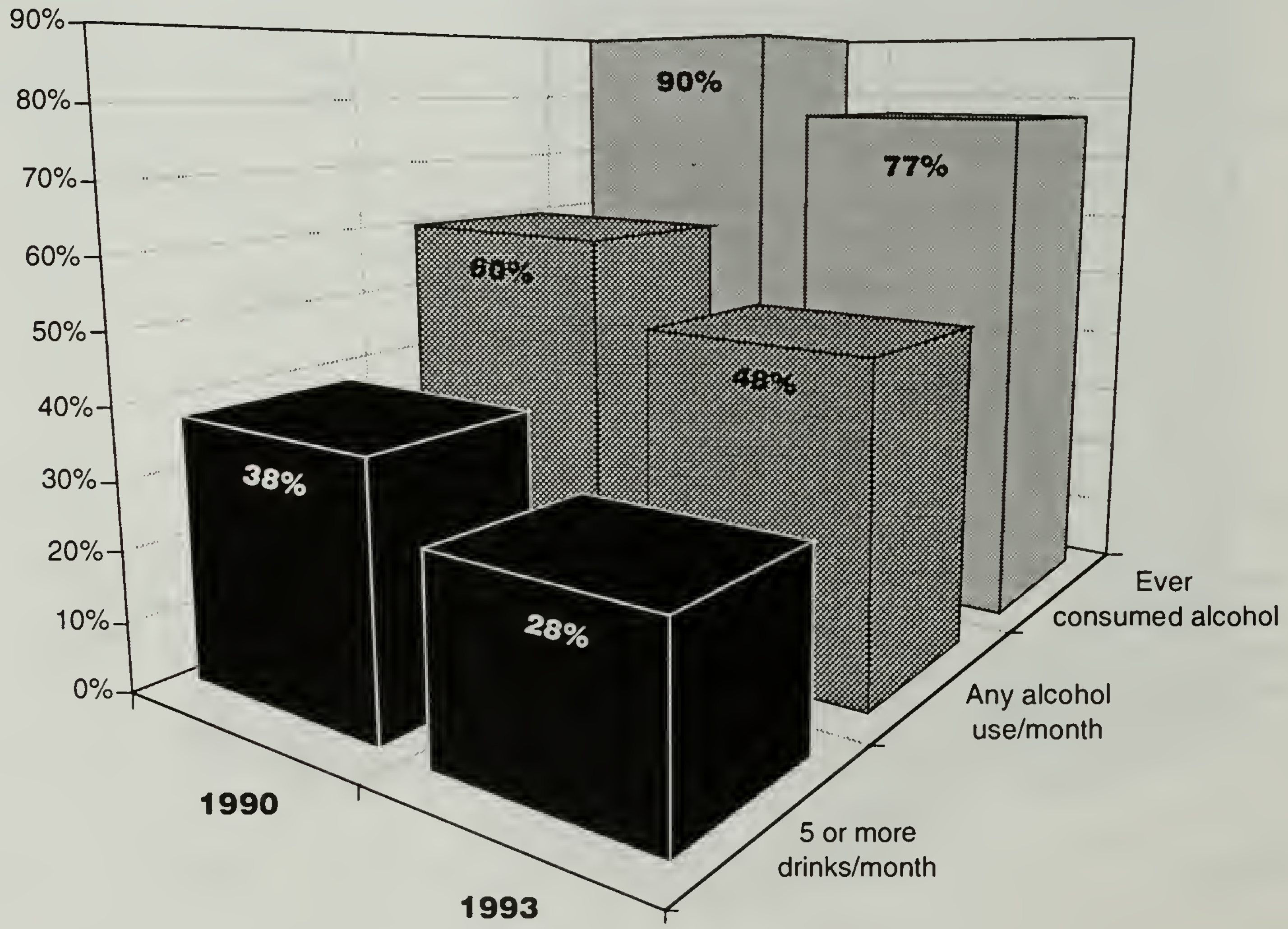
- Nearly one-third of the high school students stated that they had been offered, sold or given drugs on school grounds within the prior school year. This is the equivalent of more than 72,000 such transactions on school grounds in the past year -- or a drug transaction every minute within Massachusetts high schools.

## Topic: Consumption of alcohol by high school students

The consumption of alcohol is linked to violence among peers, dating violence, suicide, early sexual activitiy and motor vehicle accidents. Heavy drinking is also a significant factor in academic and employment problems and incarceration.

- 47% of high school students reported that they had had a drink within the last month. 42% of ninth grade students stated that they had been drinking within the past month, while 57% of twelfth graders admitted such consumption.
- There are no significant differences by gender in the use or consumption of alcohol except in the response of recent usage.
- A greater percentage of white students indicated that they had consumed five or more drinks within the past 30 days when compared to African-American and Hispanic students.
- There was a significant reduction in consumption between 1990 and 1993; 90% of the students in 1990 reported ever drinking, while the figure was 77% in 1993. Such reductions were also reported by those students who drank within the past month (60% in 1990 v 48% in 1993) and those who drank heavily in the last month (38% in 1990 v. 28% in 1993).

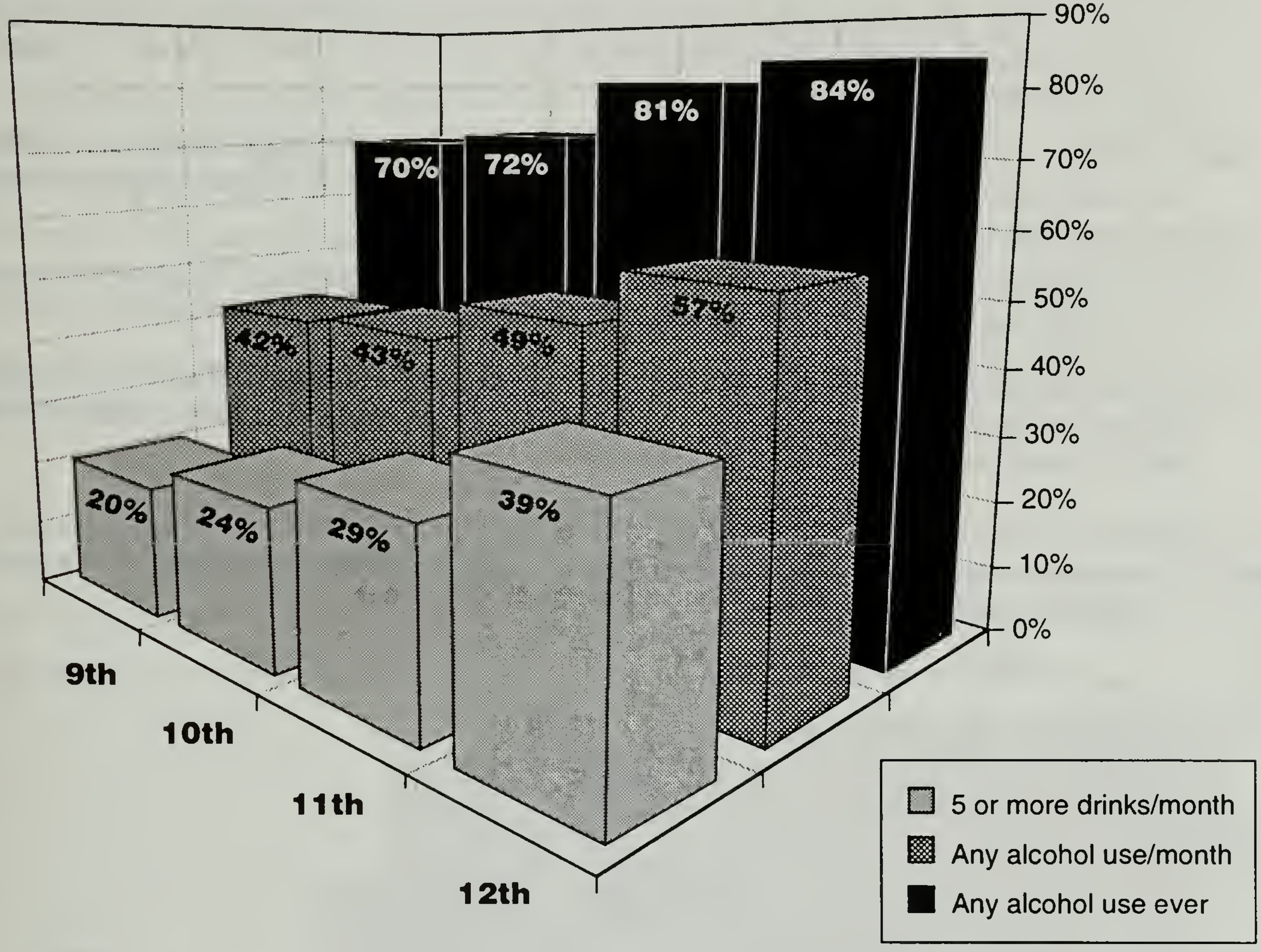
**Chart 6.3. Alcohol use by Massachusetts students. 1990 and 1993**



*Source*: Massachusetts Department of Public Health

## Direct Measure of the Goal: Alcohol-free Students and Schools

**Chart 6.4. Percentage of students who had 5 or more drinks within the past month**



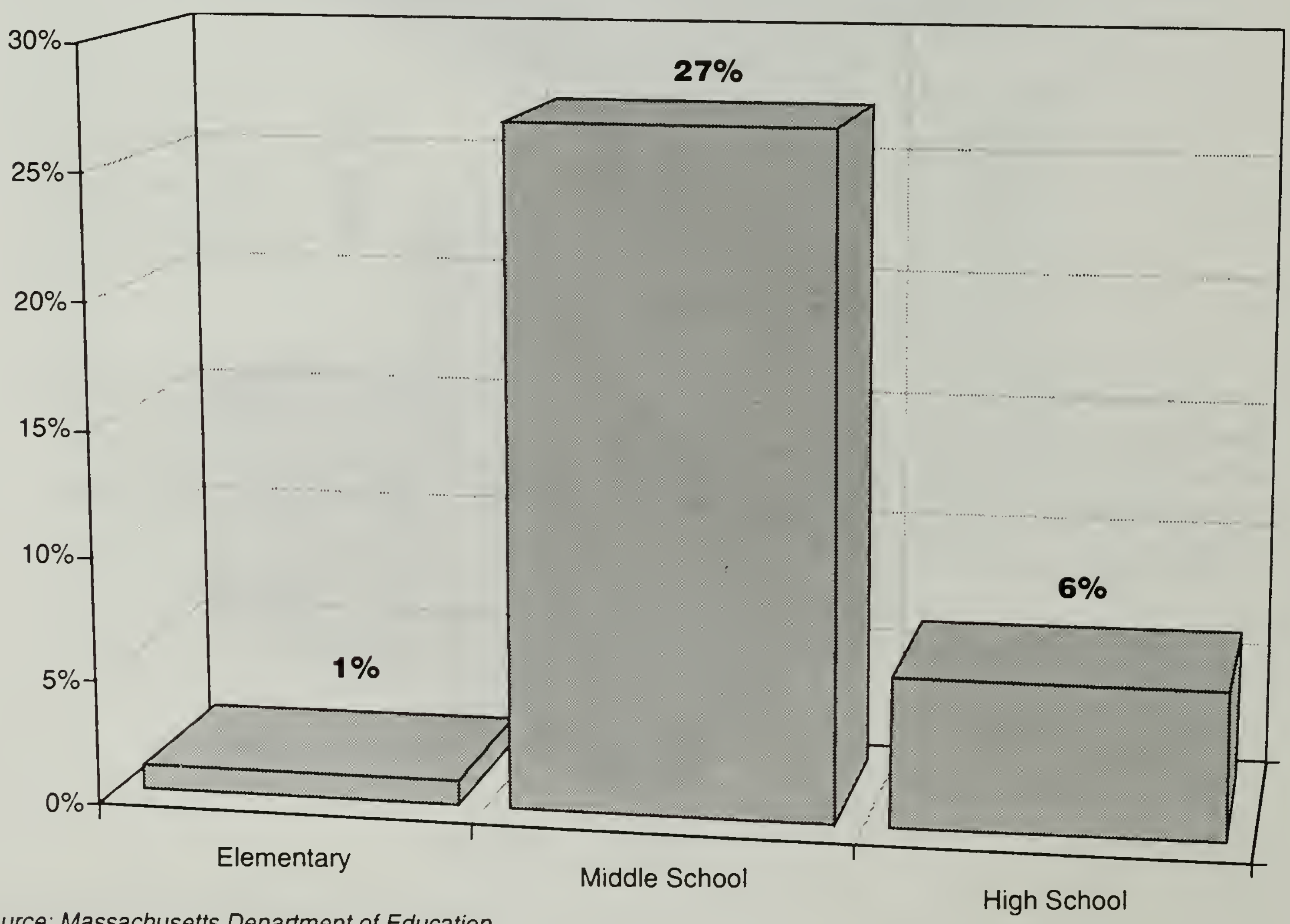
- A little more than 5% of the students reported consuming alcohol *on school grounds* within the past month. This is slightly less than the 7% of students who reported using marijuana on school grounds in the same time period. The difference may be related to the difficulty in concealing alcohol on school grounds, as opposed to the relative ease of concealing illegal drugs.

### Topic: Weapons and violence in schools

The issue is simple: if we want to promote higher levels of achievement, if we want to discourage drop-outs, if we want to attract highly qualified personnel to teaching, then we must make our schools safer. The data in Massachusetts is distrurbing:

- 10% of the high school students reported that they had carried a weapon onto school grounds within the previous month. This translates into approximately 23,000 students in Massachusetts. Nationally, this percentage is 6%.
- As is the case with many of the school violence issues, there is a significant gender difference with weapons: 15% of the male high school students reported carrying a weapon on school grounds. This contrasts with 5% of the female students.
- 6% of high school students reported that they had ever carried a gun. However, this represents 11% of the male students -- and only 1% of the female students.
- 20% of middle school principals report that physical violence between students is a moderate to serious problem in their schools. 17% of both elementary and high school principals report such violence as a moderate to serious issue.

**Chart 6.5. Percentage of principals reporting that students carrying weapons was a moderate to serious problem in their school, 1992 MEAP report**

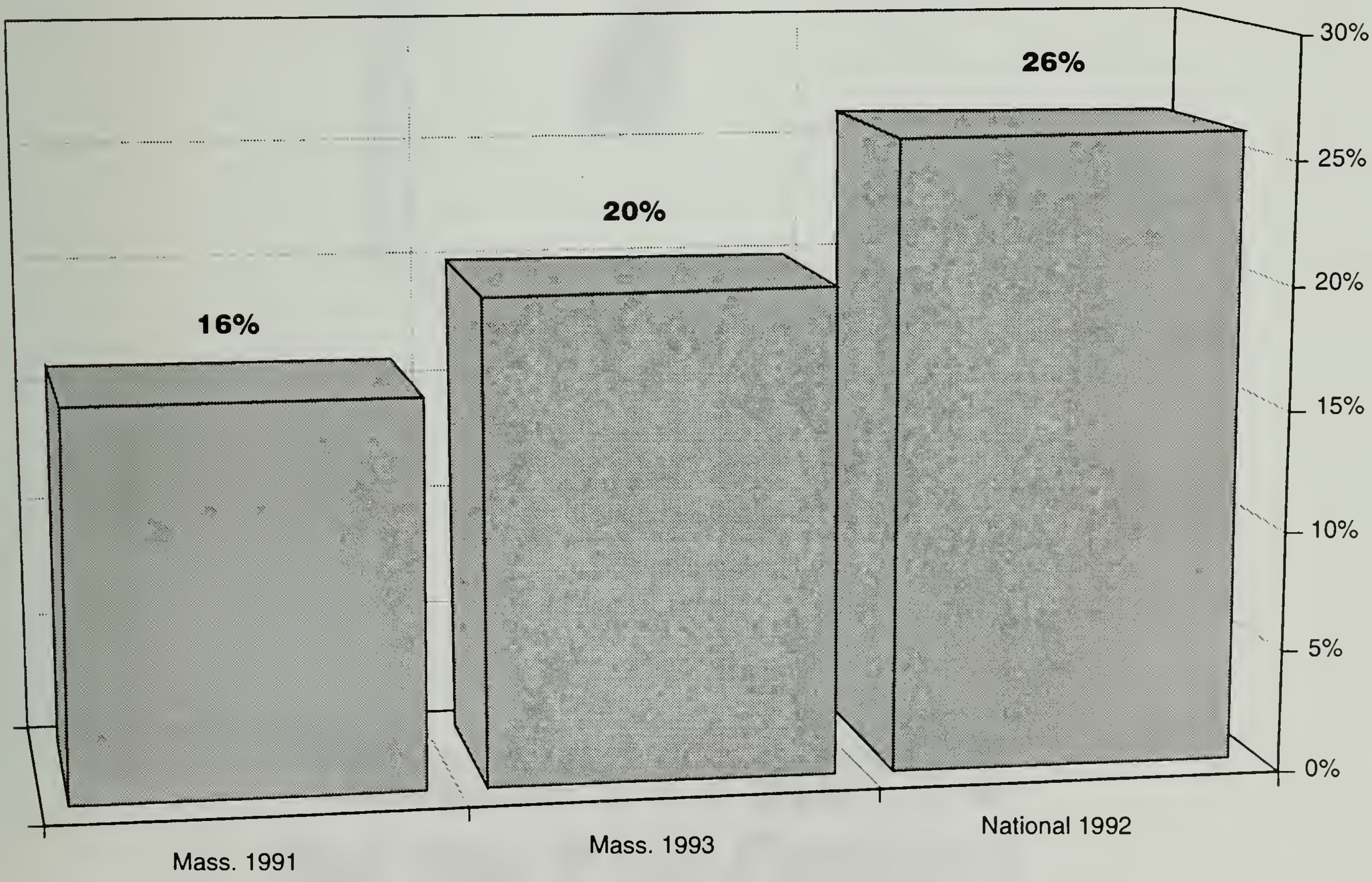


*Source: Massachusetts Department of Education*

## Direct Measure of the Goal: Schools Free of Violence and Crime

- 5% of the high school students reported missing at least one day of school in the prior school year because they feared for their personal safety. This represents a minimum of 11,500 school days in the aggregate. The incidence of missing school for safety reasons was much higher for Hispanic students (13%) and African-American students (10%).
- 9% of high school students stated that they had been threatened or injured with a weapon on school grounds. The incidence of threats was greater for the younger (12% of ninth graders) students than the older students (7% of twelfth graders).
- 15% of the Massachusetts high school students related that they had been in a physical fight on school grounds. However, there was a significant gender difference in this report: 22% of the male students, compared with 8% of the female students.
- As might be expected, principals in urban schools reported that physical fights and weapons in schools were a problem more than did their counterparts in other schools.

**Chart 6.6. Percentage of students reporting that they carried a weapon within last 30 days**



*Source: Massachusetts Department of Education*

# *GOAL*

# 7

# Teachers Prepared for the 21st Century

If we are to succeed in developing a reformed educational system, then we will need teachers who are prepared and current to teach to new standards, using new technologies and employing new assessments.

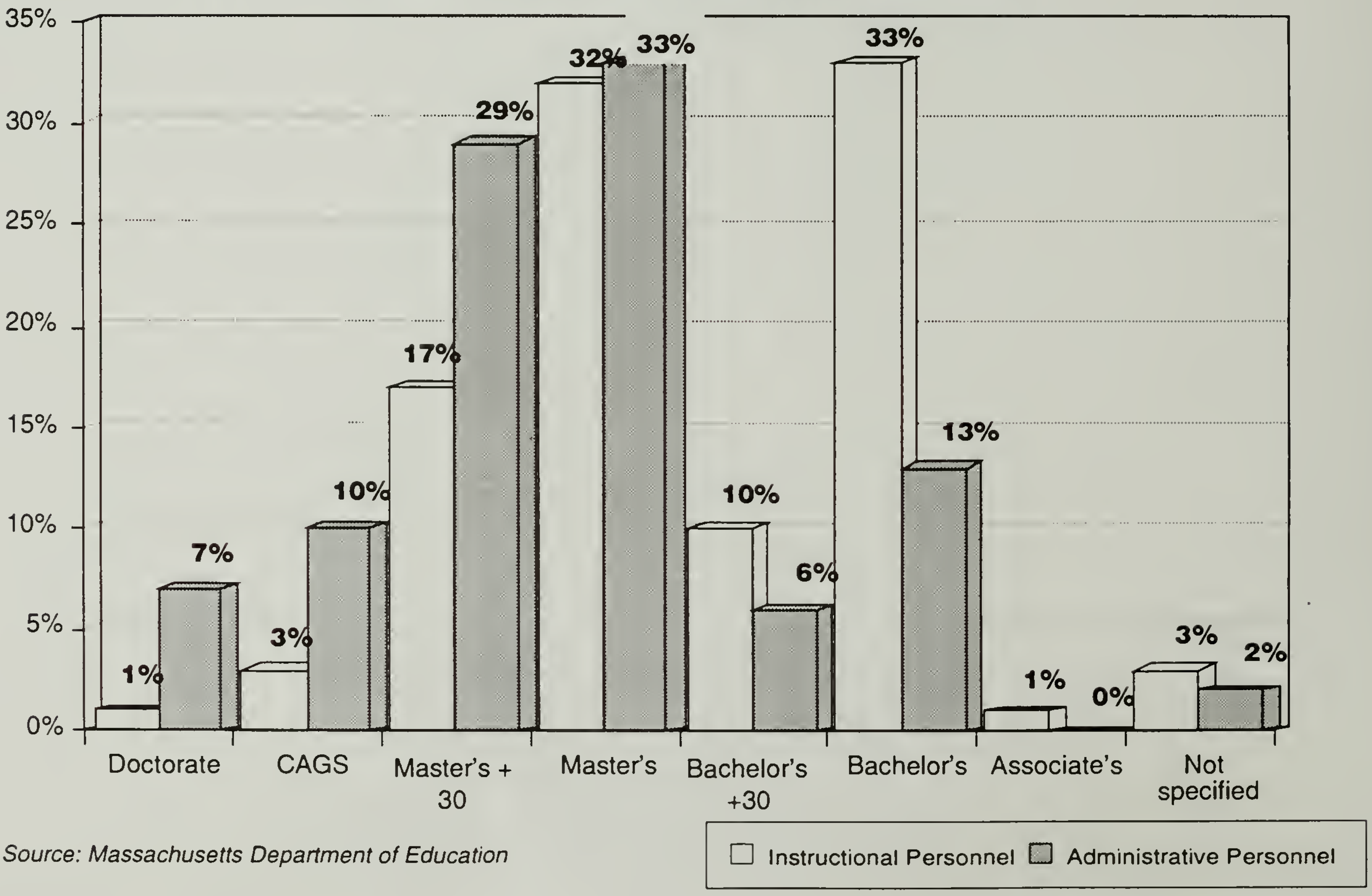
In Massachusetts, the average teacher is highly educated and keeping current with the trends of the profession. However, a substantial minority of teachers do not appear to be involved with professional development and clearly have some difficulty with their classroom assignments. Accordingly, the Education Reform Act addressed this issue by changing the heretofore permanent teaching certificate to a five year renewable certificate with a requirement for continuous professional development. It is hoped that these changes -- just as the new standards for student learning are developed -- will propel a higher level of teacher preparedness and professionalism.

## Topic: The Educational Background and Professional Development of Educators

Massachusetts educators tend to have more educational degrees than their peers in other states. However, like teachers across this country, the majority of teachers have degrees in education, not a degree in a subject matter.

- A third of the teachers surveyed by the 1992 Massachusetts Educational Assessment Program had undertaken no in-service or professional development beyond the requirements of the district's collective bargaining agreement.
- Eighteen percent (18%) of the fourth grade teachers had no in-service training in mathematics in the prior year. Seventeen percent (17%) of these teachers had no in-service training in reading in the prior year.
- According to the Carnegie Foundation's report, *The Condition of Teaching: A State-by-State Analysis*, 18% of the teachers in Massachusetts report that they are teaching subjects that they are unqualified to teach. This survey indicates that the Massachusetts figure is slightly less than the national average of 20% of the teachers.

**Chart 7.1. The Educational Background of Educators in Massachusetts**



*Source: Massachusetts Department of Education*

## Additional Important Information to Evaluate Improvement in Education: Academic Preparation of Teachers

It is clear that the overwhelming majority of educators (65%) have their degree in education rather than a degree in a content or subject area. With the changes in law which *require* a subject matter degree as a prerequisite for a teaching certificate, it can be anticipated that there will be considerable shifts in these percentages in the next few years.

- The only field of study in which those educators under the age of 40 out-number those educators over 40 is special education -- a subject area which has been in development over the last 25 years.

**Table 7.1. The field of study for educators in Massachusetts**

| Major Field of Study | Percent of Educators with Major | Percent of Personnel with Major | |
|---|---|---|---|
| | | Under Age 40 | Over Age 40 |
| General Education | 28.8% | 26.7% | 69.5% |
| Subject Area Education | 16.2% | 28.4% | 68.0% |
| Other Education | 12.5% | 20.2% | 75.9% |
| Special Education | 8.0% | 54.5% | 38.6% |
| Social Sciences | 6.3% | 18.3% | 77.8% |
| English | 4.4% | 17.8% | 78.4% |
| Psychology | 2.7% | 35.4% | 60.0% |
| Physical Sciences | 2.5% | 20.2% | 76.0% |
| Foreign Languages | 2.3% | 25.2% | 72.1% |
| Mathematics | 2.0% | 23.3% | 73.5% |
| Business/Management | 1.8% | 20.3% | 75.9% |
| Fine Arts | 1.2% | 31.7% | 64.2% |
| Computer/Information processing | 0.8% | 27.6% | 68.7% |
| Biological/Life Sciences | 0.6% | 24.4% | 73.4% |
| Library Science | 0.6% | 16.2% | 80.1% |
| Nursing | 0.6% | 15.9% | 78.6% |
| Multi/Interdisciplinary | 0.5% | 25.9% | 69.5% |
| Geography | 0.2% | 16.7% | 80.1% |
| Other | 3.6% | | |
| Not specified | 4.4% | | |

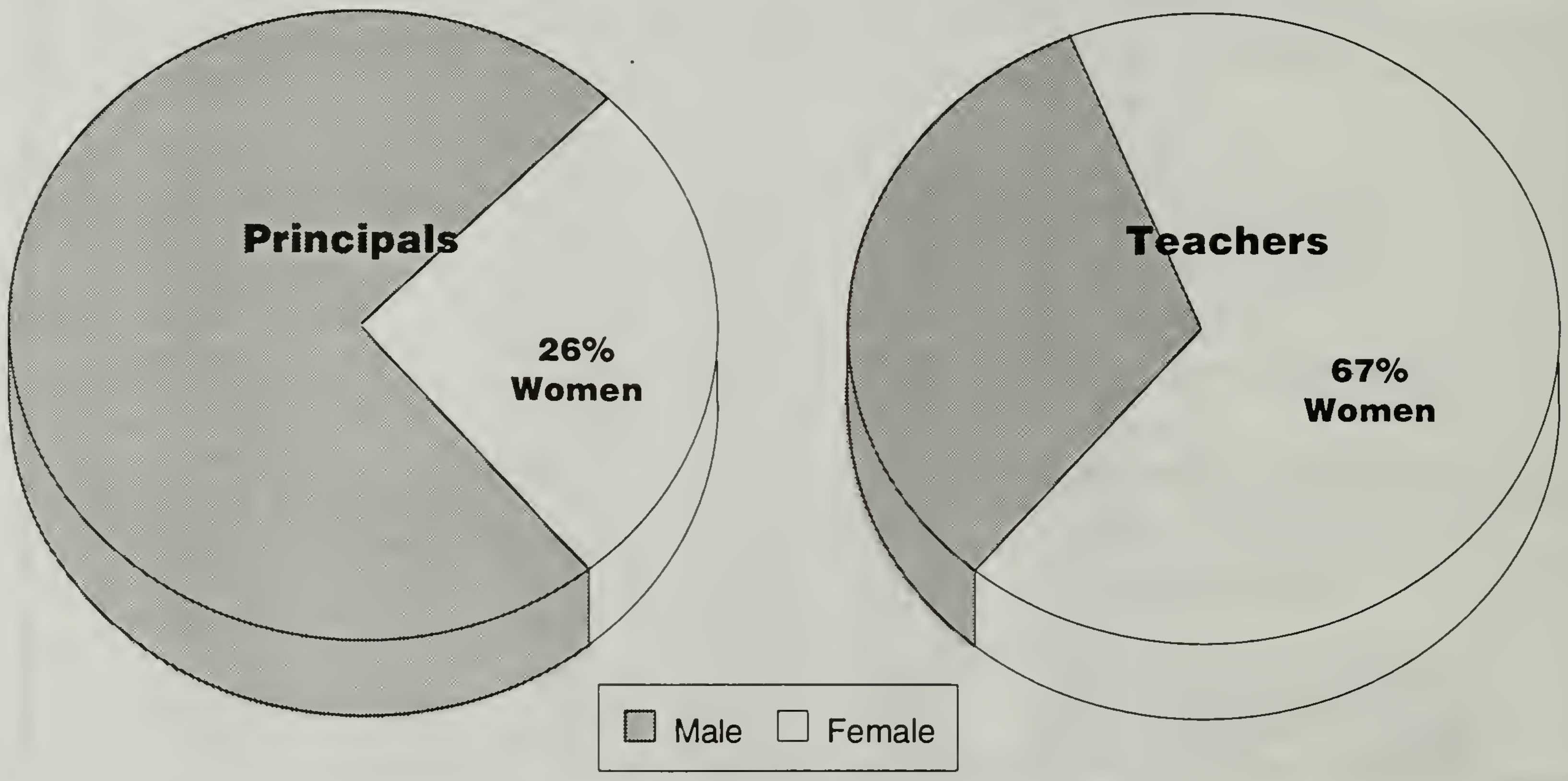
*Source: Massachusetts Department of Education*

### Topic: The gender of teachers and administrators

As several national reports such as the the Carnegie Commission's study *A Nation Prepared: Teachers for the 21st Century*, have demonstrated, teaching has developed into a "feminized" profession. This issue has evolved both from an historic lack of opportunity in other professions for women and an archaic view of traditional gender roles and responsibilities. The increased presence of male teachers, particularly in urban schools, should be seen as a positive trend to provide a better school environment for all students. However, an increased presence of women teachers in secondary classes such as science, math and social studies is also important to encourage young women to excel in those disciplines. Finally, talented women educators should have the opportunity to serve -- and to lead -- as principals, administrators and policymakers.

- The gender picture changes through the system: 81% of the elementary teachers are women. However, by eighth grade, the picture has shifted: only reading teachers have women as a majority. By twelfth grade, the differences in gender within the teaching corps have increased.
- Massachusetts ranks *first* among the states with the greatest percentage of men in its total public school teacher population: 37.9%; among the K-12 teacher population, the percentage is 33%. The national average for the entire public school teacher population is 27.1%.

**Chart 7.2. A comparison of gender for K-12 principals and K-12 teachers in Massachusetts**



*Sources: National Education Association; U.S. Department of Education, National Center for Educational Statistics*

## Additional Information to Evaluate Improvement in Education: Gender of Educators

**Chart 7.3. Gender of 8th Grade Teachers by Subject Matter**

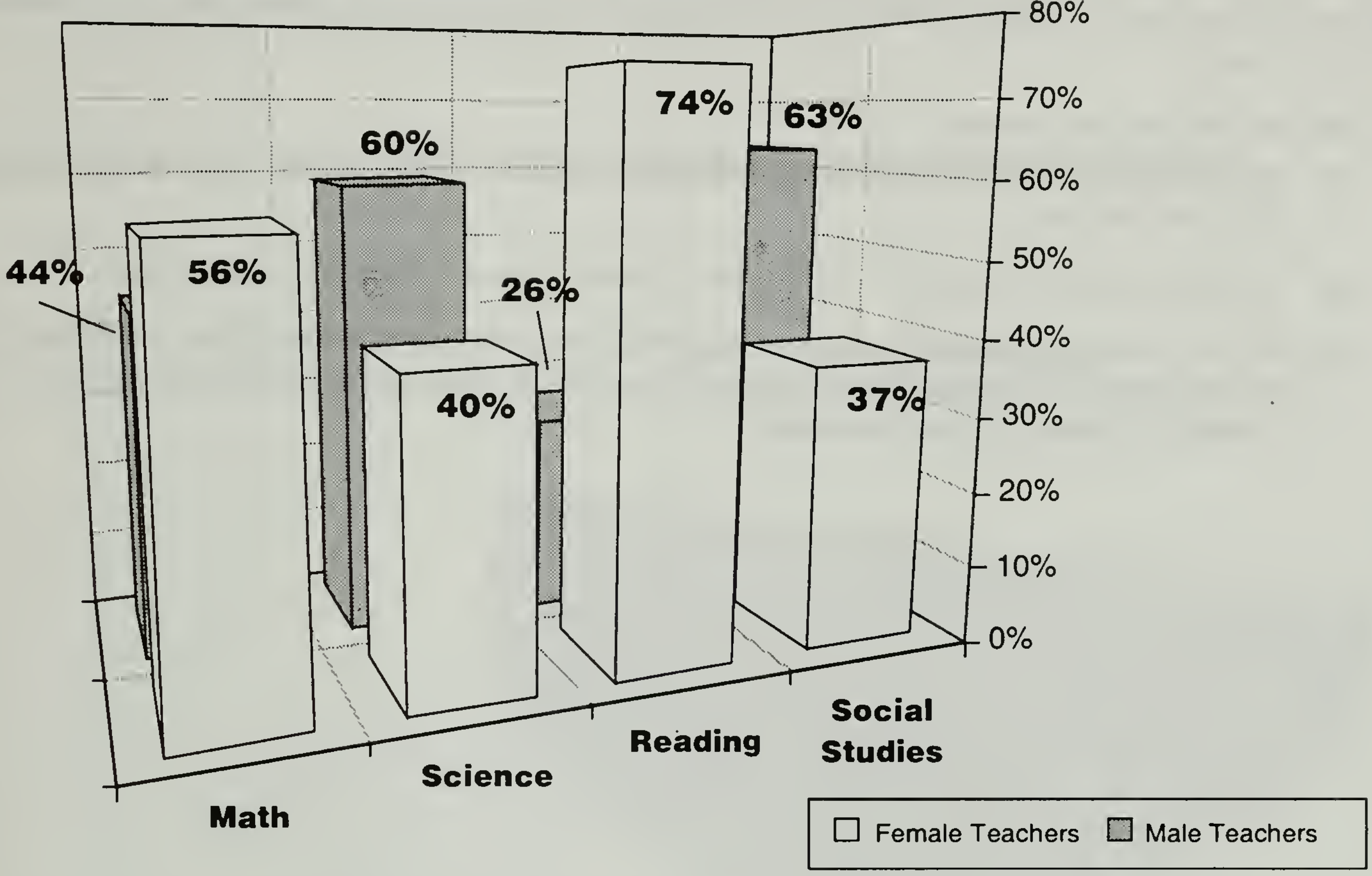
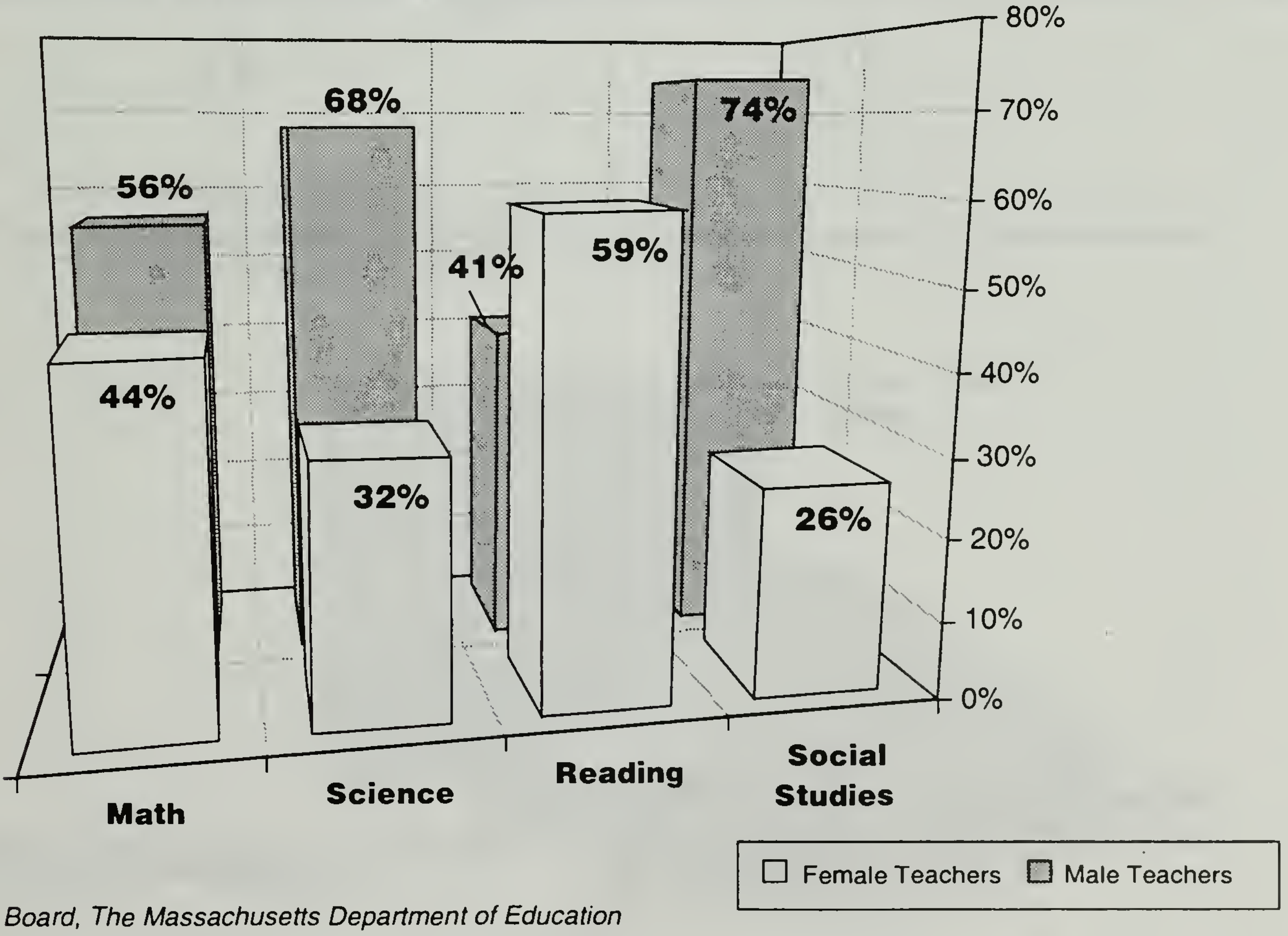


**Chart 7.4. Gender of 12th Grade Teachers by Subject Matter**



*Source: The College Board, The Massachusetts Department of Education*

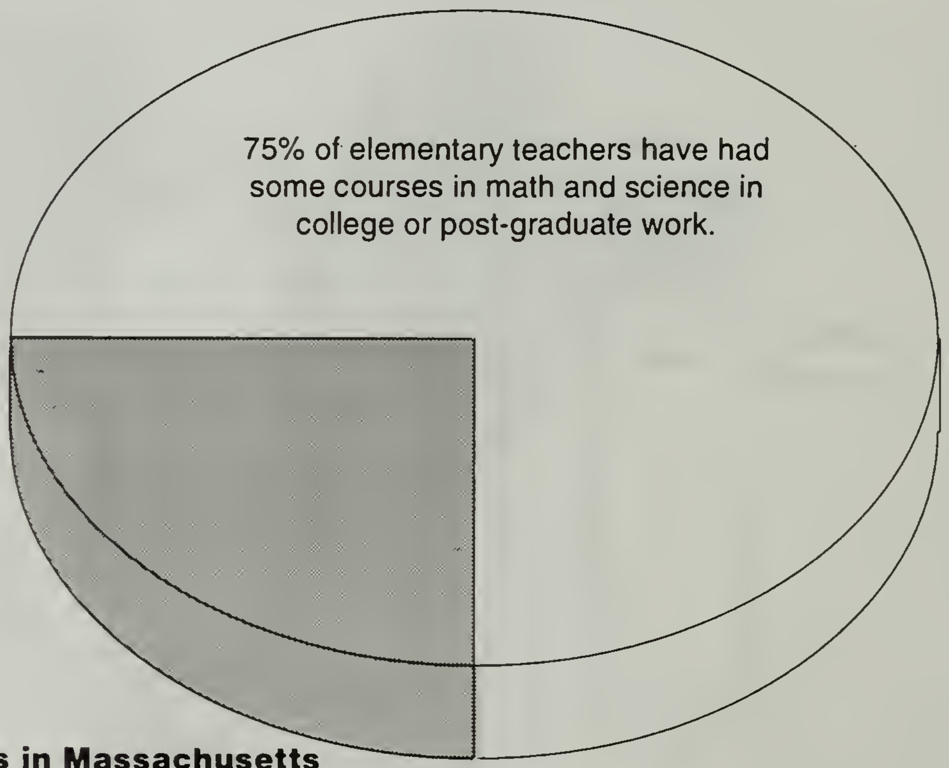
## Topic: The professional preparation of teachers of science and mathematics

An earlier chapter discussed the national goal of improving math and science education. In order to achieve a higher level of student learning, it is essential that teachers are themselves well-educated in math and science.

There are reasons for concern:

- 25% of the elementary teachers in Massachusetts have taken no math or science courses since high school.
- Only 3% of Massachusetts fourth grade teachers have a degree in mathematics.
- Slightly more than half of the secondary math and science teachers have a degree in their subject matter. Other studies indicate than 60-70% of secondary math teachers have a degree in math education, or mathematics.

**Chart 7.5. The Math and Science Background of Elementary Teachers in Massachusetts**



**25% of elementary teachers in Massachusetts have not taken any math or science courses since high school.**

*Source: Massachusetts Department of Education*

## Direct Measure of Progress toward the National Education Goals: Academic Preparation of Math and Science Teachers

Chart 7.6. The Educational Background of Secondary Math Teachers in Massachusetts

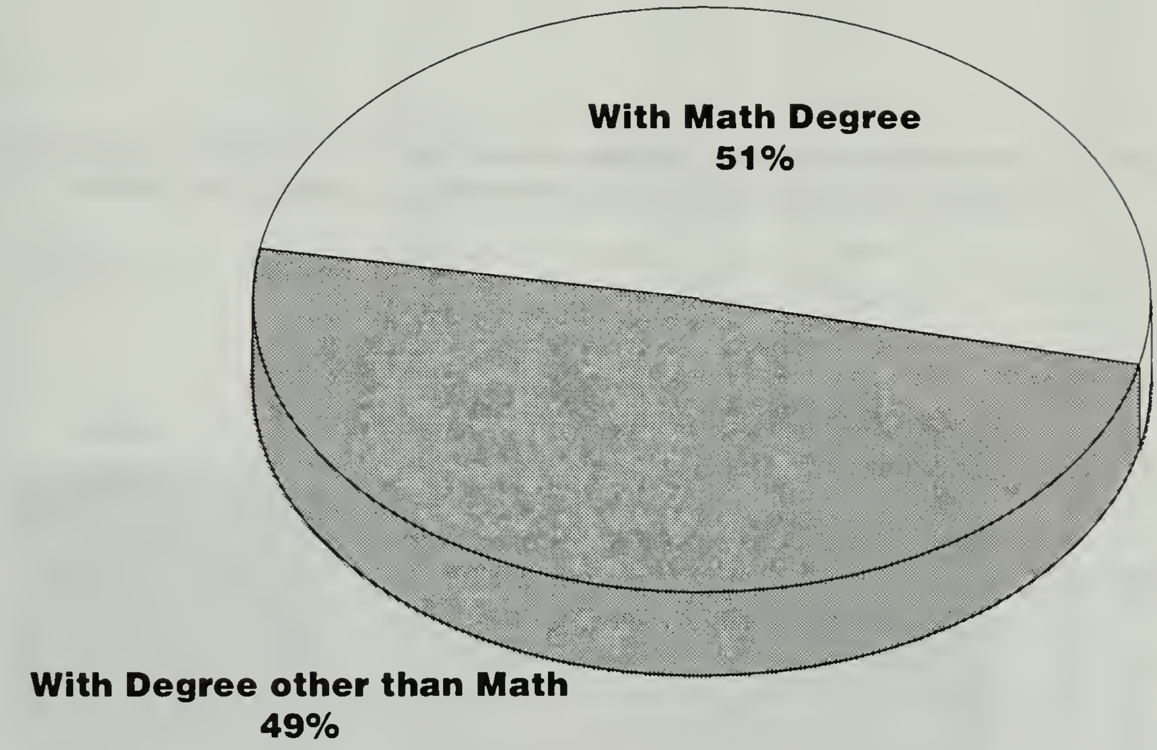
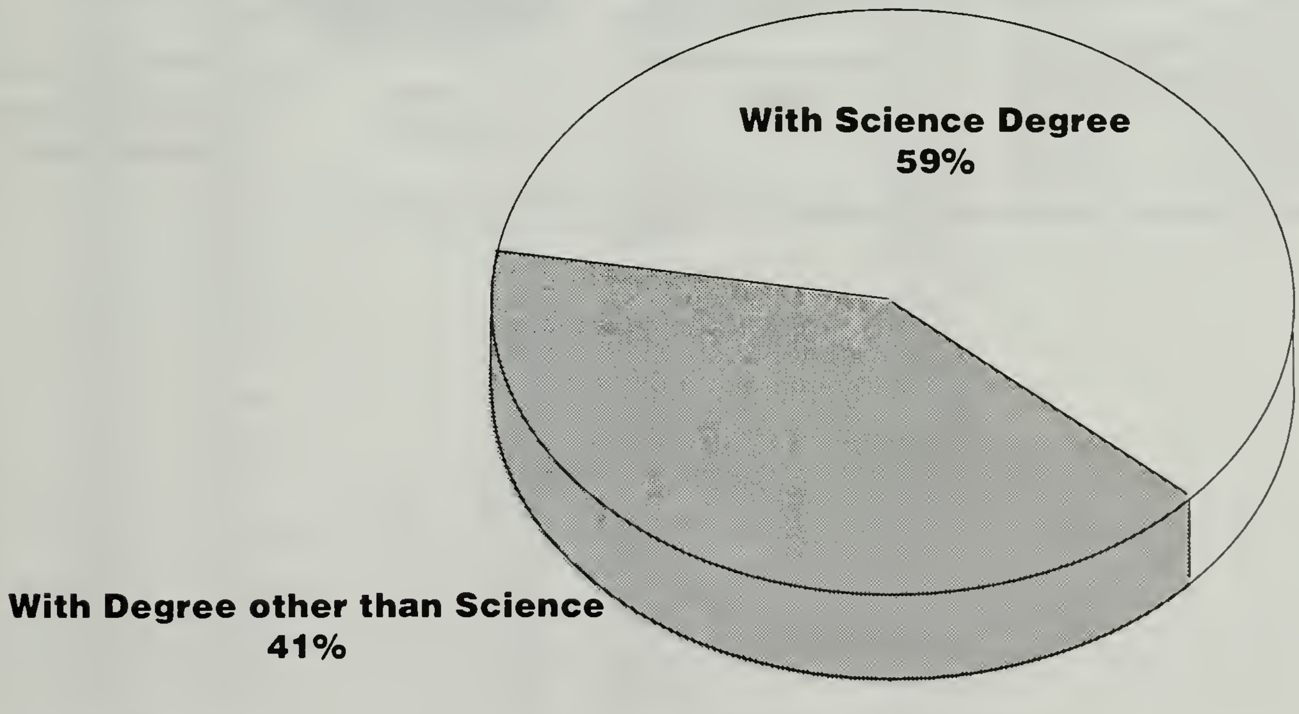


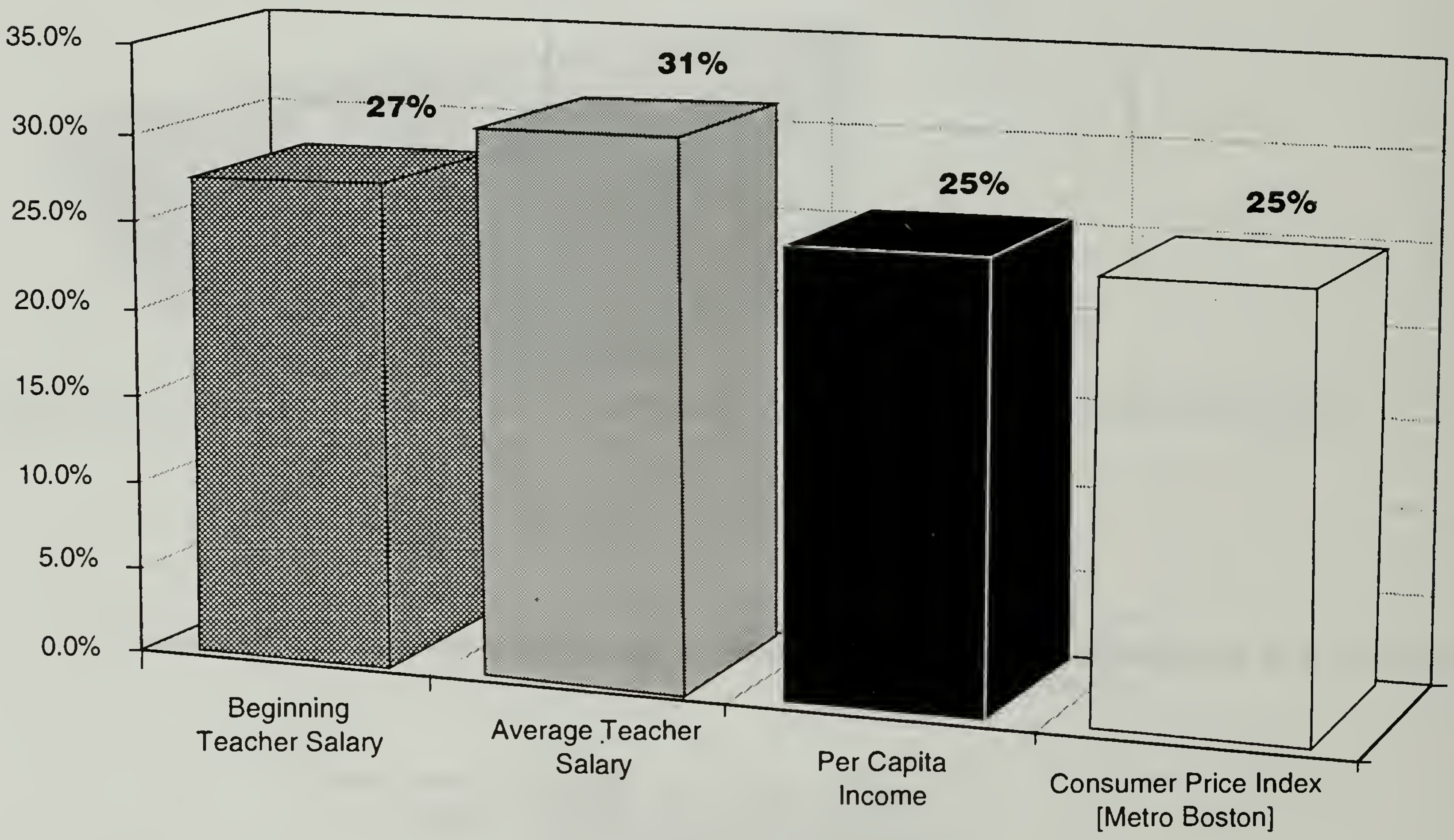
Chart 7.7. The Educational Background of Secondary Science Teachers in Massachusetts



## Topic: Teacher salaries

In order to attract a talented college graduate into teaching, teaching salaries must be competitive with other professions. Teacher salaries have increased significantly in the years 1987-1992, outpacing both the Consumer Price Index for the Boston metropolitan area and the average per capita income.

**Chart 7.8. Growth in teacher salaries compared to increases in per capita income and Consumer Price Index [Boston metropolitan area]. 1987-1992.**



*Source: School Districts, Massachusetts Department of Education, U.S. Census Bureau*

## Table 7.2. Starting salaries for teachers in Massachusetts. 1992. [As reported by the district]

| | |
|---|---|
| Newburyport | $27,987 |
| Boston | $27,357 |
| Bedford | $26,104 |
| Newton | $25,780 |
| Reading | $25,748 |
| Norwell | $25,649 |
| Quincy | $25,412 |
| East Longmeadow | $25,366 |
| Hudson | $25,249 |
| Belmont | $25,183 |
| Lexington | $25,040 |
| Lynnfield | $24,963 |
| Wayland | $24,870 |
| Chelmsford | $24,836 |
| Martha s Vineyard | $24,774 |
| Chilmark | $24,774 |
| Edgartown | $24,774 |
| Oak Bluffs | $24,774 |
| Tisbury | $24,774 |
| West Tisbury | $24,774 |
| Cambridge | $24,757 |
| Lunenburg | $24,696 |
| Carver | $24,689 |
| Concord Carlisle | $24,680 |
| Tewksbury | $24,654 |
| Milford | $24,580 |
| Carlisle | $24,570 |
| Weston | $24,540 |
| North Andover | $24,496 |
| Westborough | $24,453 |
| Concord | $24,406 |
| Nantucket | $24,396 |
| Nashoba | $24,381 |
| Dedham | $24,378 |
| Longmeadow | $24,351 |
| Acton Boxborough | $24,288 |
| Acton | $24,288 |
| Wilmington | $24,272 |
| Lincoln | $24,228 |
| Aubum | $24,056 |
| Dracut | $24,051 |
| Ware | $23,992 |
| Winchester | $23,975 |
| Marshfield | $23,974 |
| Berlin Boylston | $23,969 |
| Bridgewater | $23,958 |
| Silver Lake | $23,926 |
| Grafton | $23,912 |
| Mendon Upton | $23,905 |
| Mashpee | $23,896 |
| East Bridgewater | $23,862 |
| Quabbin | $23,842 |
| Lincoln Sudbury | $23,792 |
| Medfield | $23,792 |
| Marlborough | $23,764 |
| Ashbumham Westminster | $23,743 |
| Framingham | $23,737 |
| Hopedale | $23,713 |
| Kingston | $23,706 |
| North Reading | $23,677 |
| Hamilton Wenham | $23,673 |
| Norfolk | $23,665 |
| Burlington | $23,664 |
| Spencer East Brookfield | $23,546 |
| Bridgewater Raynham | $23,488 |
| Stoneham | $23,467 |
| Boxborough | $23,454 |
| Rockland | $23,409 |
| Westwood | $23,403 |
| Marion | $23,390 |
| Uxbridge | $23,340 |
| Brookline | $23,330 |
| Williamsburg | $23,327 |
| Bourne | $23,319 |
| West Bridgewater | $23,316 |
| Manchester by the Sea | $23,301 |
| Plympton | $23,270 |
| Easton | $23,219 |
| Raynham | $23,207 |
| Dover Sherborn | $23,207 |
| Dover | $23,207 |
| Sherborn | $23,207 |
| Halifax | $23,185 |
| Woburn | $23,168 |
| King Philip | $23,146 |
| Millbury | $23,138 |
| Weymouth | $23,090 |
| Bellingham | $23,066 |
| Whitman Hanson | $23,014 |
| Maynard | $23,000 |
| Bolton | $23,000 |
| Northborough | $22,957 |
| Harvard | $22,952 |
| Westford | $22,948 |
| Wellesley | $22,948 |
| Andover | $22,945 |
| Hanover | $22,939 |
| Medford | $22,925 |
| Holliston | $22,924 |
| Swampscott | $22,901 |
| Dartmouth | $22,878 |
| Wrentham | $22,850 |
| Ashland | $22,839 |
| Lenox | $22,832 |
| Palmer | $22,818 |
| Watertown | $22,811 |
| Chicopee | $22,792 |
| Norwood | $22,772 |
| Needham | $22,760 |
| Topsfield | $22,748 |
| Wilbraham | $22,746 |
| Wareham | $22,726 |
| South Hadley | $22,712 |
| Southborough | $22,709 |
| Dighton Rehoboth | $22,690 |
| Hingham | $22,690 |
| Littleton | $22,684 |
| Sandwich | $22,681 |
| Sudbury | $22,629 |
| Nahant | $22,619 |
| Ayer | $22,617 |
| Peabody | $22,602 |
| Revere | $22,601 |
| Hampden Wilbraham | $22,574 |
| Danvers | $22,566 |
| Mattapoisett | $22,565 |
| Plymouth | $22,528 |
| Plymouth Carver | $22,528 |
| Boxford | $22,509 |
| Franklin | $22,509 |
| Oxford | $22,507 |
| Hopkinton | $22,497 |
| Southwick Tolland | $22,477 |
| Wales | $22,471 |
| Quaboag Regional | $22,465 |
| Fall River | $22,455 |
| Taunton | $22,440 |
| Tantasqua | $22,383 |
| Brockton | $22,380 |
| Mount Greylock | $22,363 |
| Central Berkshire | $22,352 |
| Swansea | $22,320 |
| Stow | $22,313 |
| Hampshire | $22,292 |
| Cohasset | $22,228 |
| Medway | $22,196 |
| Haverhill | $22,192 |
| New Bedford | $22,180 |
| Eastham | $22,133 |
| Clinton | $22,129 |
| Whitman | $22,114 |
| Randolph | $22,107 |
| Princeton | $22,099 |
| Plainville | $22,086 |
| Amherst | $22,067 |
| Pelham | $22,067 |
| Amherst Pelham | $22,067 |
| Holyoke | $22,050 |
| Falmouth | $22,034 |
| Natick | $22,029 |
| Webster | $22,028 |
| Everett | $22,027 |
| Hanson | $22,024 |
| Braintree | $22,008 |
| Lowell | $22,000 |
| Duxbury | $21,988 |
| Provincetown | $21,970 |
| Truro | $21,970 |
| Easthampton | $21,944 |
| Northampton | $21,938 |
| North Middlesex | $21,923 |
| Rowe | $21,861 |
| Masconomet | $21,857 |
| Douglas | $21,840 |
| Chatham | $21,835 |
| Northborough-Southborough | $21,830 |
| Wellfleet | $21,821 |
| Springfield | $21,795 |
| Barnstable | $21,775 |
| Tyngsborough | $21,772 |
| Billerica | $21,768 |
| Lancaster | $21,763 |
| Avon | $21,760 |
| Groton Dunstable | $21,759 |
| Mansfield | $21,757 |
| Triton | $21,736 |
| Middleborough | $21,712 |
| Worcester | $21,670 |
| Pittsfield | $21,659 |
| Fairhaven | $21,657 |
| Leicester | $21,646 |
| Seekonk | $21,629 |
| Milton | $21,622 |
| Sutton | $21,606 |
| Melrose | $21,600 |
| Richmond | $21,578 |
| Dennis Yarmouth | $21,570 |
| Erving | $21,538 |
| Newbury | $21,534 |
| Walpole | $21,523 |
| Monson | $21,499 |
| Westhampton | $21,492 |
| Scituate | $21,464 |
| Shrewsbury | $21,455 |
| Harwich | $21,451 |
| Arlington | $21,448 |
| Georgetown | $21,351 |
| Acushnet | $21,331 |
| Brewster | $21,281 |
| Orleans | $21,281 |
| Nauset | $21,281 |
| Westport | $21,279 |
| Williamstown | $21,240 |
| Westfield | $21,238 |
| Chesterfield Goshen | $21,232 |
| Middleton | $21,217 |
| Berkshire Hills | $21,119 |
| Mohawk Trail | $21,105 |
| Ipswich | $21,085 |
| Northbridge | $21,060 |
| Foxborough | $21,057 |
| Rockport | $21,038 |
| Somerset | $21,032 |
| North Brookfield | $21,020 |
| Ludlow | $21,000 |
| Waltham | $20,999 |
| Essex | $20,928 |
| Leominster | $20,883 |
| Malden | $20,855 |
| Sandisfield | $20,837 |
| Conway | $20,820 |
| Deerfield | $20,820 |
| Sunderland | $20,820 |
| Whately | $20,820 |
| Berlin | $20,785 |
| Boylston | $20,785 |
| Salem | $20,771 |
| Canton | $20,759 |
| Marblehead | $20,756 |
| Abington | $20,756 |
| Somerville | $20,737 |
| Norton | $20,725 |
| West Springfield | $20,721 |
| Hull | $20,697 |
| Agawam | $20,682 |
| Frontier | $20,639 |
| Freetown | $20,589 |
| Lakeville | $20,589 |
| Freetown Lakeville | $20,589 |
| Lanesborough | $20,557 |
| Belchertown | $20,552 |
| Granville | $20,529 |
| Brookfield | $20,458 |
| Millis | $20,430 |
| Salisbury | $20,424 |
| Athol Royalston | $20,420 |
| Gardner | $20,415 |
| Wakefield | $20,403 |
| Amesbury | $20,387 |
| Hatfield | $20,385 |
| West Boylston | $20,374 |
| Greenfield | $20,370 |
| Southampton | $20,369 |
| Hawlemont | $20,338 |
| Holbrook | $20,335 |
| Granby | $20,331 |
| Buckland Colrain Shelburn | $20,322 |
| Savoy | $20,300 |
| Saugus | $20,255 |
| Blackstone Millville | $20,238 |
| Gloucester | $20,225 |
| Hampden | $20,168 |
| North Attleboro | $20,125 |
| Rowley | $20,094 |
| Hadley | $20,034 |
| Hancock | $20,010 |
| Winchendon | $20,000 |
| Fitchburg | $19,998 |
| Stoughton | $19,959 |
| Holland | $19,760 |
| Narraganset | $19,753 |
| Ashfield Plainfield | $19,733 |
| Southern Berkshire | $19,730 |
| Petersham | $19,708 |
| Shirley | $19,660 |
| New Salem Wendell | $19,579 |
| Leverett | $19,566 |
| Groveland | $19,451 |
| Merrimac | $19,451 |
| West Newbury | $19,451 |
| Pentucket | $19,451 |
| Ralph C. Mahar | $19,236 |
| Methuen | $19,025 |
| Lee | $18,840 |
| North Adams | $18,619 |
| Otis | $18,600 |
| Attleboro | $18,425 |
| Florida | $18,128 |
| Clarksburg | $18,000 |
| Berkley | $17,695 |
| Sturbridge | Did not report data |
| Pioneer Valley | Did not report data |
| Brimfield | Did not report data |
| Gateway | Did not report data |
| Southbridge | Did not report data |
| Pembroke | Did not report data |
| Chelsea | Did not report data |
| Beverly | Did not report data |
| Holden | Did not report data |
| Lawrence | Did not report data |
| Lynn | Did not report data |
| Orange | Did not report data |
| Paxton | Did not report data |
| Rochester | Did not report data |
| Rutland | Did not report data |
| Sharon | Did not report data |
| Shutesbury | Did not report data |
| Sterling | Did not report data |
| Winthrop | Did not report data |
| Adams Cheshire | Did not report data |
| Dudley Charlton | Did not report data |
| Farmington River | Did not report data |
| Gill Montague | Did not report data |
| Old Rochester | Did not report data |
| Wachusett | Did not report data |
| Gosnold | Did not report data |

# *GOAL*

# 8

# Parents - The First Teachers & Continuing Partners in Education

The research is compelling: when parents are actively and responsibily involved with their child's life, then the child is less likely to be involved with drugs, less likely to be involved with disruptive or criminal behavior, and more likely to succeed in school. Parents are the first teachers for children and, when they are included as continuing partners in education, the student's chances for success are greatly enhanced.

In order to enhance the involvement of parents, the Education Reform Act called for the establishment of school-based management boards, known as school councils, which mandated an increased role for parents in their local schools.

In addition, the Executive Office of Education has established a Parent Information Center which has provided parents, school committee members and other local policymakers with school district profiles detailing many important indicators of investment in schools and student performance. In its first nine months of operation, the Parent Information Center mailed out more than 35,000 school district profiles.

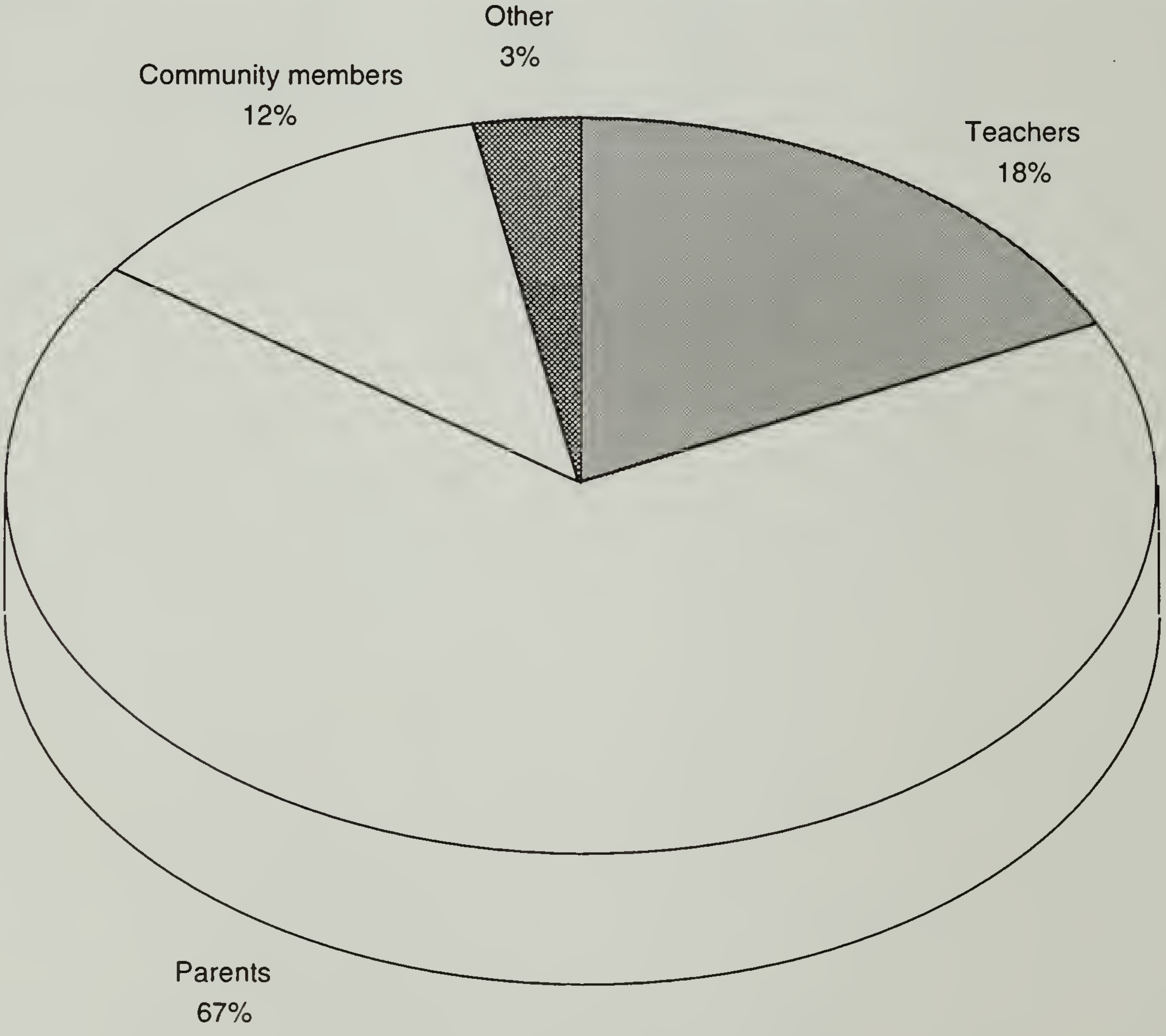
More recently, this particular goal was made a part of the federal Goals 2000 legislation. Other indicators will be suggested by the National Governors Association and the National Goals Panel in the future.

## Topic: School Councils

One of the first changes required by the Education Reform Act which was quickly implemented in the fall of 1993 was the establishment of school councils at every school in the Commonwealth. The law called for the establishment of councils within the first 40 days of the school year. It is estimated by the Department of Education that more than 90% of the schools met the law's mandate.

In 1993-94, the Department of Education surveyed the schools to find out who was involved with school councils and how the parents were selected for the councils.

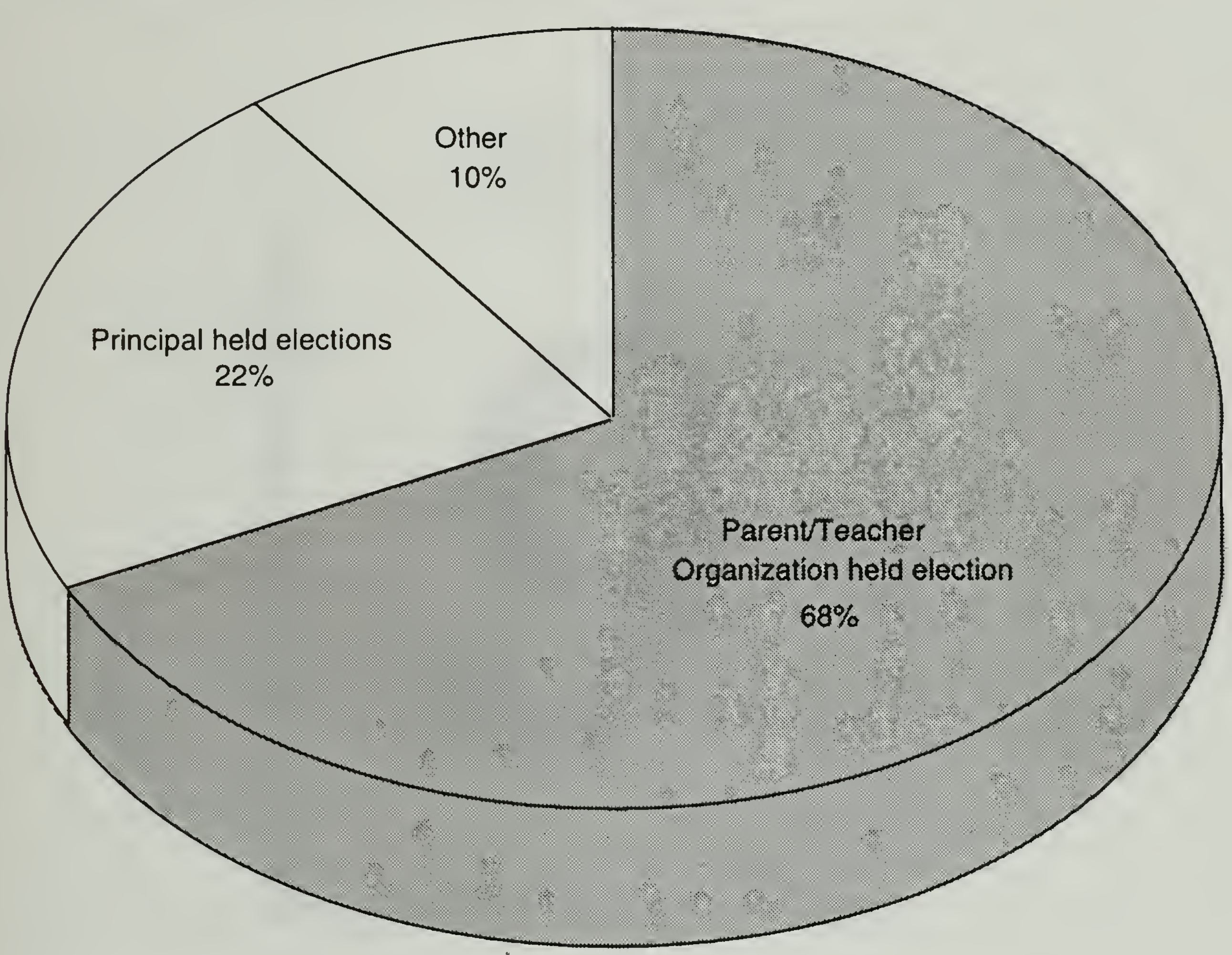
**Chart 8.1. Who serves with the principal as the co-chair of the school council?**



*Source: Massachusetts Department of Education*

## Direct Measure of the Goal: Parents on School Councils

**Chart 8.2. How were the parents selected for the school council?**



*Source: Massachusetts Department of Education*

*GOAL*

# 9

# Clearly Defined Missions for Schools and Higher Education

The issue is simple. Our schools, our vocational schools, our community colleges, our state colleges and the public university need to have clearly-defined missions in order to have their resources focused on their goals so we can thereby measure their success.

However, as commonsense as this attitude might be, as the numbers of students have declined, schools and colleges have redefined their mission so as to keep students enrolled. Over the past three years, there have been several forums which have broached this issue of mission statement for the various sectors of education.

- The Commission on the Future of State Colleges and Community Colleges called for a stronger definition of mission for the state colleges.
- The Education Reform Act abolished the general track among academic and comprehensive schools. The purpose of this section is designed to encourage students to seek a more appropriate educational program, either directed to a program with enhanced work skills or to a traditional higher education path.

This goal will be an extremely difficult one to measure. Although some indicators have been suggested, little data is available on any progress toward defining mission.

# *GOAL*

# *10*

# Technology in Classrooms

Over the past year and a half, a bold new initiative has been developed which has the potential to fundamentally transform the way schools undertake the business of education. Officials from the Executive Office of Education, together with senior staff of the Executive Office of Economic Affairs and the Division of Capital Planning and Operations, have been working with dozens of businesses, superintendents, teachers and others to author a comprehensive, statewide plan to integrate technology throughout schools, homes, libraries, businesses, colleges and universities. This initiative, known as Mass Ed On-Line, proposes to fundamentally restructure how schools are run, how classes are conducted and how students learn. The fundamental goal of Mass Ed On-Line is to ensure that every child in Massachusetts has the opportunity to have access to and productively use technology by the year 2000.

In sum, the goals of Mass Ed On-Line are three:

- it will provide a powerful learning tool for students;
- it will provide technical and professional support for teachers; and
- it will significantly improve the administrative efficiency and accountability throughout the educational system.

However, Mass Ed On-Line will not simply be limited to the K-12 system. Building on such systems as the NearNet and Internet, Mass Ed On-Line contemplates universal access to these systems so that the higher education and K-12 schools becomes more of a coherent, coordinated system.

In developing this plan, the Mass Ed On-Line task force undertook some important research into the state of technology in Massachusetts schools:

- It is estimated that more than 50% of the computers currently used in Massachusetts classrooms are obsolete, unable to be networked and incompatible with the future technology needs of the school district. In addition, there are significant compatibility issues among the computers even within schools and classrooms.
- The best estimates place an investment of about $30 per student on technology in Massachusetts. Most of this amount is directed towards the purchase of hardware -- although this $30 average would not pay for a computer in a classroom of 25 students in any one year. Obviously, in order to have the full amount of hardware, including modem and printer, networking linkages and software would require 4-6 years of investment per classroom. Only a small amount (4%) is used on training -- which significantly slows the full usage of such learning tools.
- Fewer than a third of Massachusetts schools report having a technology plan that included the training, procurement, and instructional use of technology. Far fewer (10%) report having a plan which was integrated with a district plan. It would appear that technology -- if integrated within learning at all -- is a site-based initiative of principal and staff.
- Ten percent of the schools in the Commonwealth have no video monitior or television. More than 60% of the schools have no CD-ROM or videodisc capacity.

The promise of Mass Ed On-Line is not simply a statement of a far-off vision of Massachusetts classrooms. This spring, the Board of Education directed its Commissioner to begin the initial steps to provide the hardware and training to allow every school in Massachusetts to access and communicate with the Department of Education via telecommunications.

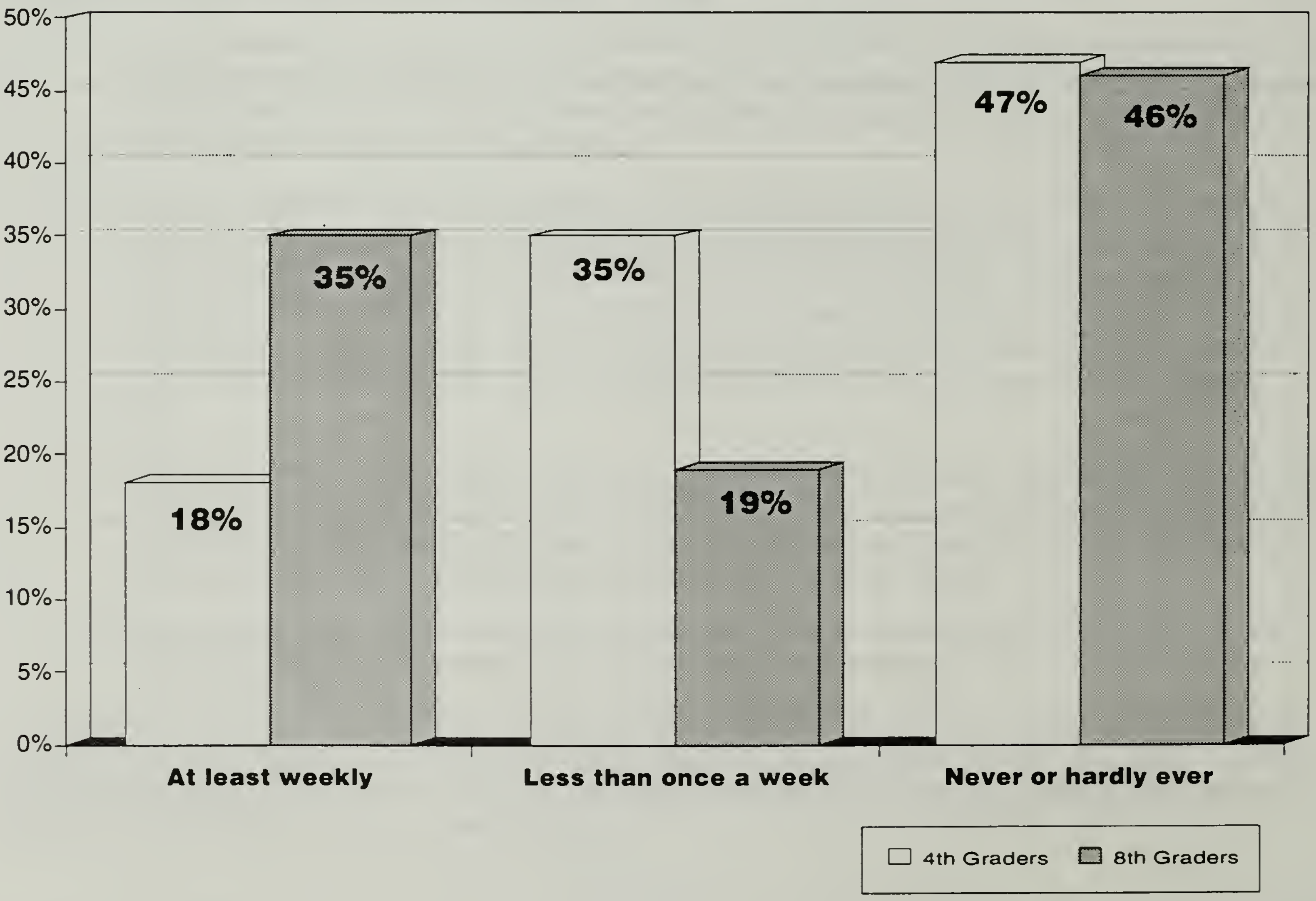
### Topic: Introduction of Technology in the Teaching of Math

The use of technological aids within the classroom is not a futuristic dream for schools. The National Council of Teachers of Mathematics has established a set of standards for the teaching of mathematics in this country. The highly-regarded NCTM standards call for the usage of calculators in the classroom in order to have students better understand various math concepts, such as estimation.

Furthermore, computer-aided instruction in mathematics can enhance the student's learning. Aspects of instruction, including student assessment can also be facilitated by computer learning. Thus far, there is not yet widespead use of either calculators or computers in the instruction of math in Massachusetts.

- ► Forty-seven percent of the 4th grade teachers report never or hardly ever using calculators in the classroom. A similar percentage of 8th math teachers (46%) also report little or no usage of calculators. There are several possible explanations for roughly half of the classrooms reporting no usage of the calculators, such as: a lack of resources (calculators) in the district; unfamiliarity with the NCTM standards and the use of calculators; or the district's math curriculum emphasizes calculator usage after 4th grade and before 8th grade.

**Chart 10-1. Use of calculators in instruction of math. (As reported by teachers)**

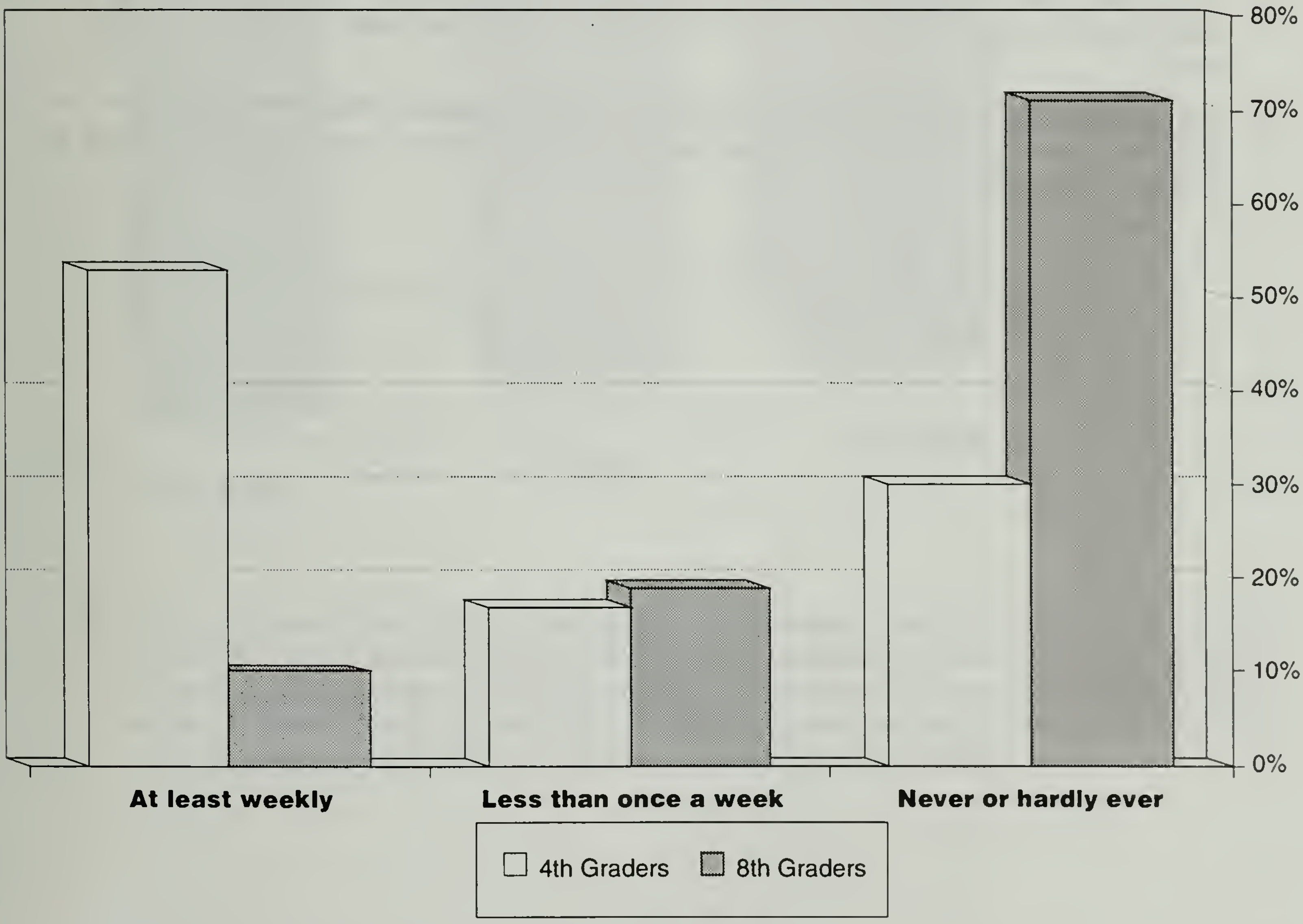


*Source: NAEP Mathematics Report Card for the Nation and the States*

## Direct Measure of the Goal:
## Use of Technology in the Instruction of Math

- Somewhat interestingly, computers are used in math instruction much more in 4th grade than 8th grade. 71% of the 8th grade math teachers never or hardly ever use computers in their classrooms while 53% of 4th grade teachers use computers in the instruction of math at least weekly. Again, there may be several possible explanations involving a lack of appropriate software or the availability of hardware, or a lack of any clear understanding of how such tools might be used in the instruction of higher level math courses.
- However, the 1993 survey undertaken as part of the Mass Ed On-Line project indicated that 91% of the districts used computers in the teaching of mathematics.

**Chart 10-2. Use of Computers in Instruction of Math. (As reported by teachers)**



*Source: NAEP Mathematics Report Card for the Nation and the States*

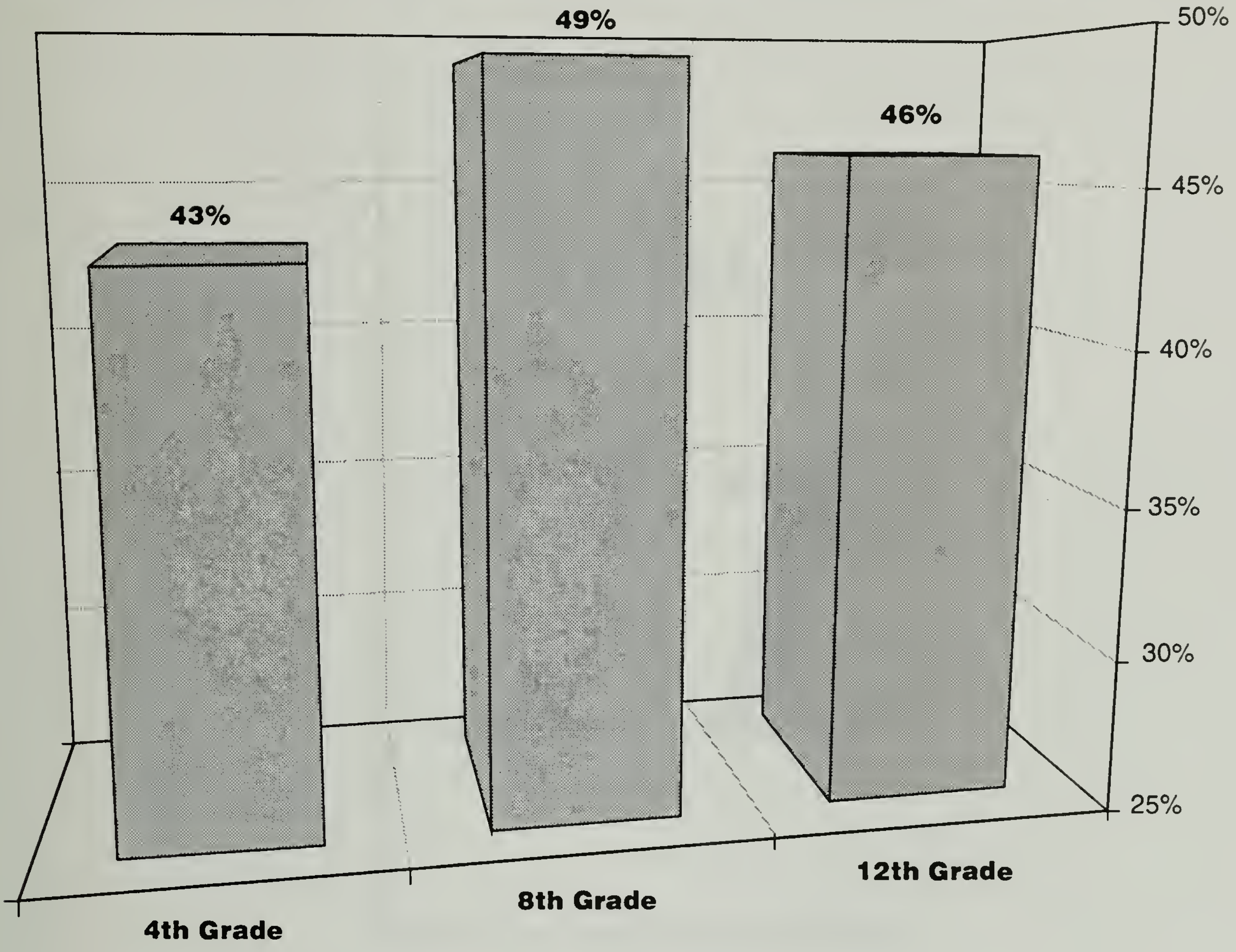
### Topic: Computers in the Home

As computers become less expensive and more available, more households will have one of these powerful tools in their home. With a computer at home, coupled with some ancillary equipment, a student may be able to access an encyclopedia via a modem, interact with other students across this country and abroad and use various telecommunications services to even practice SAT assessments.

- In 1992, about 45% of the students in Massachusetts reported that they had access to a computer at home. Elementary students report using their computer for games more than any other usage.
- According to the MEAP assessments, there appears to be some correlation between access to a computer and high achievement. In 4th grade, 72% of those who report having no access to a computer at home performed below Level 1 on the MEAP proficiency standard. It is an open question whether access to a computer is a *causal* factor in higher achievement or simply an indicator of a host of other factors associated with higher achievement.
- In grades 8 and 12, simple access to a computer is less of a factor with high achievement. A more significant factor becomes whether the student *uses* the computer in performing school work.
- The growth in home ownership of computers has been substantial in the past few years. According to a U.S. Census Bureau's survey in 1989, 42.7% of the students had a computer at home. In 1984, this figure was 27.3%.

## An Important Indicator of Progress toward Goal: Access to computers at home

**Chart 10-3. Students who report access to a computer at home. 1992 MEAP survey**



- The percentage of students who have access to computers at home is relatively uniform across the grades. There are approximatley 40-50% of the students who have a computer at home. There is no data available about whether these students have a modem which might provide access to the information superhighway or a CD-rom player for the computer which might allow for more complex multi-media resources by the students in their homes.

*GOAL*

# 11

# Providing Access and Opportunity

If education is to provide the access to opportunity for success, then issues of equity must be resolved. Much of the focus of the landmark court decision, *McDuffy v. Robertson*, was directed to the issue of equitable resources which were lacking in some school districts. Similarly, the thrust of the funding formula of the Educational Reform Act was directed to *providing* those resources so that these underfunded school districts could provide the texts, computers, and teachers for students to achieve success.

The following tables seek to track the levels of per pupil expenditure for K-12 district with more than 1,500 students. By limiting the discussion to those districts, one omits regional and smaller school districts which have cost anomalies related to the size or organization.

As one can note from the following tables, the difference between the highest spending district and the lowest spending district increased from 1982 to 1992. However, in 1993, a new trend may have emerged as the gap narrowed slightly. The FY1993 data includes a significant increase in state school aid, although not related to the foundation formula incorporated in the FY1994 distribution. Future *Conditions* report will continue to track the spending in schools so that equitable investment in schools may be ascertained.

However, equity in education is not simply related to fiscal investments. There are important issues about the *uses* of such investments. For example, several sections of this report detailed issues of different levels of student performance as related to race, ethnicity and gender. It is hoped that the increased investment would be used by school districts to address such issues.

**Education Reform Act**

One of the central features of the Education Reform Act is the establishment of a "foundation" budget for each student in the Commonwealth. In essence, the foundation budget should provide for an equalized spending level for students across the Commonwealth. The foundation's concept of equalization is not a simple leveling of spending but is designed to provide the opportunity to learn for those students who are disadvantaged. Although the state foundation average is initially pegged at $5,500, some urban districts may have a foundation figure of $6,500 - $7,000 in order to address the learning needs of these disadvantaged students. Accordingly, the tables presented herein should eventually demonstrate a significant increase in spending in the under-funded districts and a leveling between the higher spending and underfunded districts.

**Table 11.1. 1987 Total Per Pupil Expenditures of K-12 Districts with more than 1,500 students. Equity comparison**

| District | Grades | PPE | Ratio to Lowest | Ratio to Top |
|---|---|---|---|---|
| Cambridge | K-12 | $5,901 | 2.23 | 1.00 |
| Weston | K-12 | $5,457 | 2.06 | 0.92 |
| Watertown | K-12 | $5,401 | 2.04 | 0.92 |
| Wellesley | K-12 | $5,306 | 2.01 | 0.90 |
| Westwood | K-12 | $5,156 | 1.95 | 0.87 |
| Boston | K-12 | $4,982 | 1.88 | 0.84 |
| Bedford | K-12 | $4,976 | 1.88 | 0.84 |
| Brookline | K-12 | $4,966 | 1.88 | 0.84 |
| Wayland | K-12 | $4,962 | 1.88 | 0.84 |
| Newton | K-12 | $4,913 | 1.86 | 0.83 |
| Needham | K-12 | $4,880 | 1.84 | 0.83 |
| Lexington | K-12 | $4,736 | 1.79 | 0.80 |
| Medford | K-12 | $4,707 | 1.78 | 0.80 |
| Waltham | K-12 | $4,703 | 1.78 | 0.80 |
| Arlington | K-12 | $4,501 | 1.70 | 0.76 |
| Winchester | K-12 | $4,468 | 1.69 | 0.76 |
| Revere | K-12 | $4,448 | 1.68 | 0.75 |
| Lynnfield | K-12 | $4,404 | 1.67 | 0.75 |
| Westborough | K-12 | $4,375 | 1.65 | 0.74 |
| Woburn | K-12 | $4,373 | 1.65 | 0.74 |
| Canton | K-12 | $4,346 | 1.64 | 0.74 |
| Somerville | K-12 | $4,336 | 1.64 | 0.73 |
| Belmont | K-12 | $4,329 | 1.64 | 0.73 |
| Wakefield | K-12 | $4,232 | 1.60 | 0.72 |
| Natick | K-12 | $4,222 | 1.60 | 0.72 |
| Marblehead | K-12 | $4,214 | 1.59 | 0.71 |
| Norwood | K-12 | $4,190 | 1.58 | 0.71 |
| Framingham | K-12 | $4,140 | 1.57 | 0.70 |
| Burlington | K-12 | $4,080 | 1.54 | 0.69 |
| Randolph | K-12 | $4,078 | 1.54 | 0.69 |
| Medfield | K-12 | $4,069 | 1.54 | 0.69 |
| Melrose | K-12 | $4,061 | 1.54 | 0.69 |
| Hull | K-12 | $4,055 | 1.53 | 0.69 |
| Gloucester | K-12 | $4,045 | 1.53 | 0.69 |
| Stoneham | K-12 | $4,045 | 1.53 | 0.69 |
| Holyoke | K-12 | $4,042 | 1.53 | 0.68 |
| Berkshire Hills | K-12 | $4,024 | 1.52 | 0.68 |
| Danvers | K-12 | $4,021 | 1.52 | 0.68 |
| Quincy | K-12 | $4,011 | 1.52 | 0.68 |
| Saugus | K-12 | $3,985 | 1.51 | 0.68 |
| Winthrop | K-12 | $3,957 | 1.50 | 0.67 |
| Beverly | K-12 | $3,941 | 1.49 | 0.67 |
| Malden | K-12 | $3,913 | 1.48 | 0.66 |
| Central Berkshire | K-12 | $3,913 | 1.48 | 0.66 |
| Salem | K-12 | $3,908 | 1.48 | 0.66 |
| Milton | K-12 | $3,901 | 1.47 | 0.66 |
| Swampscott | K-12 | $3,891 | 1.47 | 0.66 |
| Dighton Rehoboth | K-12 | $3,846 | 1.45 | 0.65 |
| Braintree | K-12 | $3,843 | 1.45 | 0.65 |
| Auburn | K-12 | $3,842 | 1.45 | 0.65 |
| Hamilton Wenham | K-12 | $3,842 | 1.45 | 0.65 |
| North Reading | K-12 | $3,839 | 1.45 | 0.65 |
| Hudson | K-12 | $3,833 | 1.45 | 0.65 |
| Wilmington | K-12 | $3,829 | 1.45 | 0.65 |
| Somerset | K-12 | $3,823 | 1.45 | 0.65 |
| Norwell | K-12 | $3,819 | 1.44 | 0.65 |
| Andover | PreK-12 | $3,763 | 1.42 | 0.64 |
| Mansfield | K-12 | $3,725 | 1.41 | 0.63 |
| Dedham | K-12 | $3,709 | 1.40 | 0.63 |
| Weymouth | K-12 | $3,684 | 1.39 | 0.62 |
| Lynn | K-12 | $3,660 | 1.38 | 0.62 |
| Worcester | K-12 | $3,648 | 1.38 | 0.62 |
| Scituate | K-12 | $3,628 | 1.37 | 0.61 |
| Hingham | K-12 | $3,600 | 1.36 | 0.61 |
| Hanover | K-12 | $3,586 | 1.36 | 0.61 |
| Chelmsford | K-12 | $3,575 | 1.35 | 0.61 |
| Falmouth | K-12 | $3,572 | 1.35 | 0.61 |
| Dracut | K-12 | $3,549 | 1.34 | 0.60 |
| Gateway | K-12 | $3,543 | 1.34 | 0.60 |
| Holliston | K-12 | $3,542 | 1.34 | 0.60 |
| Pittsfield | K-12 | $3,526 | 1.33 | 0.60 |
| Attleboro | PreK-12 | $3,508 | 1.33 | 0.59 |
| Walpole | K-12 | $3,497 | 1.32 | 0.59 |
| Shrewsbury | K-12 | $3,488 | 1.32 | 0.59 |
| Longmeadow | K-12 | $3,487 | 1.32 | 0.59 |
| Sharon | K-12 | $3,487 | 1.32 | 0.59 |
| Foxborough | K-12 | $3,475 | 1.31 | 0.59 |
| Millbury | K-12 | $3,470 | 1.31 | 0.59 |
| Marlborough | K-12 | $3,467 | 1.31 | 0.59 |
| Fairhaven | K-12 | $3,450 | 1.30 | 0.58 |
| Blackstone Millville | K-12 | $3,449 | 1.30 | 0.58 |
| Ludlow | K-12 | $3,446 | 1.30 | 0.58 |
| Chicopee | K-12 | $3,441 | 1.30 | 0.58 |
| Oxford | K-12 | $3,437 | 1.30 | 0.58 |
| Medway | K-12 | $3,421 | 1.29 | 0.58 |
| Adams Cheshire | K-12 | $3,414 | 1.29 | 0.58 |
| Reading | K-12 | $3,413 | 1.29 | 0.58 |
| Lowell | K-12 | $3,408 | 1.29 | 0.58 |
| Westport | K-12 | $3,399 | 1.29 | 0.58 |
| Everett | K-12 | $3,397 | 1.28 | 0.58 |
| Franklin | K-12 | $3,387 | 1.28 | 0.57 |
| Ipswich | PreK-12 | $3,383 | 1.28 | 0.57 |
| Northampton | K-12 | $3,362 | 1.27 | 0.57 |
| Chelsea | K-12 | $3,328 | 1.26 | 0.56 |
| Stoughton | K-12 | $3,325 | 1.26 | 0.56 |
| Amesbury | K-12 | $3,319 | 1.25 | 0.56 |
| Methuen | K-12 | $3,315 | 1.25 | 0.56 |
| Greenfield | K-12 | $3,314 | 1.25 | 0.56 |
| Duxbury | K-12 | $3,309 | 1.25 | 0.56 |
| Westford | K-12 | $3,308 | 1.25 | 0.56 |
| Ayer | K-12 | $3,307 | 1.25 | 0.56 |
| Dennis Yarmouth | K-12 | $3,300 | 1.25 | 0.56 |
| Westfield | K-12 | $3,275 | 1.24 | 0.55 |
| South Hadley | K-12 | $3,274 | 1.24 | 0.55 |
| Brockton | K-12 | $3,269 | 1.24 | 0.55 |
| Newburyport | K-12 | $3,268 | 1.24 | 0.55 |
| Haverhill | K-12 | $3,264 | 1.23 | 0.55 |
| Tewksbury | K-12 | $3,240 | 1.22 | 0.55 |
| Lawrence | K-12 | $3,232 | 1.22 | 0.55 |
| Clinton | K-12 | $3,226 | 1.22 | 0.55 |
| Wareham | K-12 | $3,221 | 1.22 | 0.55 |
| North Andover | K-12 | $3,218 | 1.22 | 0.55 |
| East Longmeadow | K-12 | $3,215 | 1.22 | 0.54 |
| Bellingham | PreK-12 | $3,210 | 1.21 | 0.54 |
| Barnstable | K-12 | $3,208 | 1.21 | 0.54 |
| Peabody | K-12 | $3,206 | 1.21 | 0.54 |
| West Springfield | K-12 | $3,206 | 1.21 | 0.54 |
| Northbridge | K-12 | $3,183 | 1.20 | 0.54 |
| Seekonk | K-12 | $3,179 | 1.20 | 0.54 |
| Rockland | K-12 | $3,178 | 1.20 | 0.54 |
| Abington | K-12 | $3,141 | 1.19 | 0.53 |
| Webster | K-12 | $3,130 | 1.18 | 0.53 |
| Spencer E. Brookfield | K-12 | $3,129 | 1.18 | 0.53 |
| Quabbin | K-12 | $3,112 | 1.18 | 0.53 |
| Gill Montague | K-12 | $3,106 | 1.17 | 0.53 |
| Fall River | K-12 | $3,099 | 1.17 | 0.53 |
| Easton | K-12 | $3,076 | 1.16 | 0.52 |
| Bourne | K-12 | $3,058 | 1.16 | 0.52 |
| Taunton | K-12 | $3,055 | 1.16 | 0.52 |
| Dartmouth | K-12 | $3,052 | 1.15 | 0.52 |
| Billerica | K-12 | $3,051 | 1.15 | 0.52 |
| Ashburnham Westminster | K-12 | $3,012 | 1.14 | 0.51 |
| Springfield | K-12 | $3,004 | 1.14 | 0.51 |
| Marshfield | K-12 | $3,002 | 1.13 | 0.51 |
| Swansea | K-12 | $2,990 | 1.13 | 0.51 |
| Leominster | K-12 | $2,989 | 1.13 | 0.51 |
| Leicester | K-12 | $2,986 | 1.13 | 0.51 |
| Fitchburg | K-12 | $2,965 | 1.12 | 0.50 |
| Milford | K-12 | $2,960 | 1.12 | 0.50 |
| Easthampton | K-12 | $2,946 | 1.11 | 0.50 |
| North Adams | K-12 | $2,944 | 1.11 | 0.50 |
| Agawam | K-12 | $2,926 | 1.11 | 0.50 |
| Belchertown | K-12 | $2,918 | 1.10 | 0.49 |
| Norton | K-12 | $2,912 | 1.10 | 0.49 |
| Middleborough | K-12 | $2,843 | 1.07 | 0.48 |
| North Middlesex | K-12 | $2,829 | 1.07 | 0.48 |
| East Bridgewater | K-12 | $2,807 | 1.06 | 0.48 |
| Southbridge | K-12 | $2,751 | 1.04 | 0.47 |
| Gardner | K-12 | $2,747 | 1.04 | 0.47 |
| Palmer | K-12 | $2,742 | 1.04 | 0.46 |
| Athol Royalston | K-12 | $2,736 | 1.03 | 0.46 |
| Grafton | K-12 | $2,728 | 1.03 | 0.46 |
| North Attleborough | K-12 | $2,695 | 1.02 | 0.46 |
| Sandwich | K-12 | $2,671 | 1.01 | 0.45 |
| New Bedford | K-12 | $2,645 | 1.00 | 0.45 |

## Table 11.2. 1992 Total Per Pupil Expenditures of K-12 Districts with more than 1,500 students. Equity Comparison

| District | Grades | PPE | Ratio to Lowest | Ratio to Top |
|---|---|---|---|---|
| Cambridge | K-12 | $8,586 | 2.68 | 1.00 |
| Westwood | K-12 | $7,256 | 2.27 | 0.85 |
| Weston | K-12 | $7,177 | 2.24 | 0.84 |
| Bedford | K-12 | $6,693 | 2.09 | 0.78 |
| Brookline | K-12 | $6,691 | 2.09 | 0.78 |
| Lexington | K-12 | $6,511 | 2.03 | 0.76 |
| Wellesley | K-12 | $6,494 | 2.03 | 0.76 |
| Watertown | K-12 | $6,430 | 2.01 | 0.75 |
| Westborough | K-12 | $6,316 | 1.97 | 0.74 |
| Boston | K-12 | $6,273 | 1.96 | 0.73 |
| Newton | K-12 | $6,260 | 1.96 | 0.73 |
| Wayland | K-12 | $6,118 | 1.91 | 0.71 |
| Waltham | K-12 | $6,114 | 1.91 | 0.71 |
| Natick | K-12 | $6,057 | 1.89 | 0.71 |
| Berkshire Hills | K-12 | $6,052 | 1.89 | 0.70 |
| Somerville | K-12 | $5,947 | 1.86 | 0.69 |
| Whitman Hanson | K-12 | $5,915 | 1.85 | 0.69 |
| Arlington | K-12 | $5,914 | 1.85 | 0.69 |
| Burlington | K-12 | $5,874 | 1.84 | 0.68 |
| Dedham | K-12 | $5,768 | 1.80 | 0.67 |
| Medford | K-12 | $5,739 | 1.79 | 0.67 |
| Belmont | K-12 | $5,635 | 1.76 | 0.66 |
| Norwood | K-12 | $5,616 | 1.76 | 0.65 |
| Norwell | K-12 | $5,581 | 1.74 | 0.65 |
| Framingham | K-12 | $5,557 | 1.74 | 0.65 |
| Lynnfield | K-12 | $5,547 | 1.73 | 0.65 |
| Winchester | K-12 | $5,506 | 1.72 | 0.64 |
| Danvers | K-12 | $5,504 | 1.72 | 0.64 |
| Needham | K-12 | $5,482 | 1.71 | 0.64 |
| Marblehead | K-12 | $5,474 | 1.71 | 0.64 |
| Somerset | K-12 | $5,474 | 1.71 | 0.64 |
| Quincy | K-12 | $5,443 | 1.70 | 0.63 |
| Longmeadow | K-12 | $5,356 | 1.67 | 0.62 |
| Ipswich | PreK-12 | $5,349 | 1.67 | 0.62 |
| Stoneham | K-12 | $5,336 | 1.67 | 0.62 |
| Canton | K-12 | $5,234 | 1.64 | 0.61 |
| Woburn | K-12 | $5,225 | 1.63 | 0.61 |
| Central Berkshire | K-12 | $5,102 | 1.59 | 0.59 |
| Winthrop | K-12 | $5,101 | 1.59 | 0.59 |
| Wakefield | K-12 | $5,079 | 1.59 | 0.59 |
| Saugus | K-12 | $5,037 | 1.57 | 0.59 |
| Auburn | K-12 | $5,034 | 1.57 | 0.59 |
| Andover | PreK-12 | $5,018 | 1.57 | 0.58 |
| Newburyport | K-12 | $5,002 | 1.56 | 0.58 |
| Hamilton Wenham | K-12 | $5,000 | 1.56 | 0.58 |
| Falmouth | K-12 | $4,974 | 1.55 | 0.58 |
| Braintree | K-12 | $4,959 | 1.55 | 0.58 |
| Mansfield | K-12 | $4,959 | 1.55 | 0.58 |
| Northampton | K-12 | $4,935 | 1.54 | 0.57 |
| Marlborough | K-12 | $4,902 | 1.53 | 0.57 |
| Salem | K-12 | $4,899 | 1.53 | 0.57 |
| Swampscott | K-12 | $4,898 | 1.53 | 0.57 |
| Scituate | K-12 | $4,891 | 1.53 | 0.57 |
| Hingham | K-12 | $4,876 | 1.52 | 0.57 |
| Peabody | K-12 | $4,859 | 1.52 | 0.57 |
| Melrose | K-12 | $4,832 | 1.51 | 0.56 |
| Beverly | K-12 | $4,826 | 1.51 | 0.56 |
| Medfield | K-12 | $4,807 | 1.50 | 0.56 |
| Sandwich | K-12 | $4,807 | 1.50 | 0.56 |
| Duxbury | K-12 | $4,806 | 1.50 | 0.56 |
| Milton | K-12 | $4,795 | 1.50 | 0.56 |
| Westford | K-12 | $4,747 | 1.48 | 0.55 |
| Gateway | K-12 | $4,712 | 1.47 | 0.55 |
| Randolph | K-12 | $4,708 | 1.47 | 0.55 |
| Greenfield | K-12 | $4,701 | 1.47 | 0.55 |
| Gloucester | K-12 | $4,693 | 1.47 | 0.55 |
| Groton Dunstable | K-12 | $4,689 | 1.47 | 0.55 |
| North Reading | K-12 | $4,669 | 1.46 | 0.54 |
| Bellingham | PreK-12 | $4,666 | 1.46 | 0.54 |
| Pittsfield | K-12 | $4,642 | 1.45 | 0.54 |
| Worcester | K-12 | $4,635 | 1.45 | 0.54 |
| Ashland | K-12 | $4,633 | 1.45 | 0.54 |
| Medway | K-12 | $4,610 | 1.44 | 0.54 |
| Westport | K-12 | $4,602 | 1.44 | 0.54 |
| Walpole | K-12 | $4,585 | 1.43 | 0.53 |
| Hudson | K-12 | $4,584 | 1.43 | 0.53 |
| Hanover | K-12 | $4,579 | 1.43 | 0.53 |
| Webster | K-12 | $4,569 | 1.43 | 0.53 |
| Swansea | K-12 | $4,547 | 1.42 | 0.53 |
| Dennis Yarmouth | K-12 | $4,546 | 1.42 | 0.53 |
| Sharon | K-12 | $4,535 | 1.42 | 0.53 |
| Holliston | K-12 | $4,532 | 1.42 | 0.53 |
| Foxborough | K-12 | $4,510 | 1.41 | 0.53 |
| Malden | K-12 | $4,508 | 1.41 | 0.53 |
| Revere | K-12 | $4,507 | 1.41 | 0.52 |
| Shrewsbury | K-12 | $4,471 | 1.40 | 0.52 |
| Southwick Tolland | K-12 | $4,441 | 1.39 | 0.52 |
| Milford | K-12 | $4,409 | 1.38 | 0.51 |
| Chicopee | K-12 | $4,388 | 1.37 | 0.51 |
| Dighton Rehoboth | K-12 | $4,388 | 1.37 | 0.51 |
| Adams Cheshire | K-12 | $4,376 | 1.37 | 0.51 |
| Billerica | K-12 | $4,373 | 1.37 | 0.51 |
| South Hadley | K-12 | $4,372 | 1.37 | 0.51 |
| Weymouth | K-12 | $4,342 | 1.36 | 0.51 |
| Agawam | K-12 | $4,331 | 1.35 | 0.50 |
| Reading | K-12 | $4,330 | 1.35 | 0.50 |
| Tewksbury | K-12 | $4,325 | 1.35 | 0.50 |
| Chelmsford | K-12 | $4,320 | 1.35 | 0.50 |
| Wilmington | K-12 | $4,304 | 1.35 | 0.50 |
| North Andover | K-12 | $4,299 | 1.34 | 0.50 |
| Stoughton | K-12 | $4,299 | 1.34 | 0.50 |
| Taunton | K-12 | $4,290 | 1.34 | 0.50 |
| Millbury | K-12 | $4,288 | 1.34 | 0.50 |
| Seekonk | K-12 | $4,280 | 1.34 | 0.50 |
| Easthampton | K-12 | $4,219 | 1.32 | 0.49 |
| Ludlow | K-12 | $4,216 | 1.32 | 0.49 |
| Ashburnham Westminster | K-12 | $4,205 | 1.31 | 0.49 |
| Fall River | K-12 | $4,189 | 1.31 | 0.49 |
| Lowell | K-12 | $4,183 | 1.31 | 0.49 |
| Wareham | K-12 | $4,176 | 1.31 | 0.49 |
| Clinton | K-12 | $4,172 | 1.30 | 0.49 |
| Lunenburg | K-12 | $4,170 | 1.30 | 0.49 |
| Easton | K-12 | $4,149 | 1.30 | 0.48 |
| West Springfield | K-12 | $4,148 | 1.30 | 0.48 |
| Lynn | K-12 | $4,129 | 1.29 | 0.48 |
| Marshfield | K-12 | $4,103 | 1.28 | 0.48 |
| Ayer | K-12 | $4,097 | 1.28 | 0.48 |
| Bourne | K-12 | $4,077 | 1.27 | 0.47 |
| Springfield | K-12 | $4,076 | 1.27 | 0.47 |
| Everett | K-12 | $4,071 | 1.27 | 0.47 |
| Barnstable | K-12 | $4,070 | 1.27 | 0.47 |
| New Bedford | K-12 | $4,068 | 1.27 | 0.47 |
| Spencer E. Brookfield | K-12 | $4,059 | 1.27 | 0.47 |
| East Longmeadow | K-12 | $4,044 | 1.26 | 0.47 |
| Norton | K-12 | $4,041 | 1.26 | 0.47 |
| Gill Montague | K-12 | $4,018 | 1.26 | 0.47 |
| Attleboro | PreK-12 | $4,015 | 1.25 | 0.47 |
| Chelsea | K-12 | $3,997 | 1.25 | 0.47 |
| East Bridgewater | K-12 | $3,989 | 1.25 | 0.46 |
| Hopkinton | K-12 | $3,969 | 1.24 | 0.46 |
| North Adams | K-12 | $3,958 | 1.24 | 0.46 |
| Blackstone Millville | K-12 | $3,941 | 1.23 | 0.46 |
| Amesbury | K-12 | $3,934 | 1.23 | 0.46 |
| Leominster | K-12 | $3,930 | 1.23 | 0.46 |
| Abington | K-12 | $3,919 | 1.22 | 0.46 |
| Rockland | K-12 | $3,905 | 1.22 | 0.45 |
| Franklin | K-12 | $3,896 | 1.22 | 0.45 |
| North Attleborough | K-12 | $3,895 | 1.22 | 0.45 |
| Grafton | K-12 | $3,887 | 1.21 | 0.45 |
| Leicester | K-12 | $3,836 | 1.20 | 0.45 |
| Quabbin | K-12 | $3,808 | 1.19 | 0.44 |
| Fairhaven | K-12 | $3,785 | 1.18 | 0.44 |
| Brockton | K-12 | $3,775 | 1.18 | 0.44 |
| Oxford | K-12 | $3,732 | 1.17 | 0.43 |
| Holyoke | K-12 | $3,729 | 1.17 | 0.43 |
| Southbridge | K-12 | $3,721 | 1.16 | 0.43 |
| Methuen | K-12 | $3,717 | 1.16 | 0.43 |
| Fitchburg | K-12 | $3,691 | 1.15 | 0.43 |
| North Middlesex | K-12 | $3,670 | 1.15 | 0.43 |
| Haverhill | K-12 | $3,639 | 1.14 | 0.42 |
| Lawrence | K-12 | $3,638 | 1.14 | 0.42 |
| Westfield | K-12 | $3,634 | 1.14 | 0.42 |
| Dracut | K-12 | $3,624 | 1.13 | 0.42 |
| Palmer | K-12 | $3,603 | 1.13 | 0.42 |
| Uxbridge | K-12 | $3,586 | 1.12 | 0.42 |
| Middleborough | K-12 | $3,579 | 1.12 | 0.42 |
| Belchertown | K-12 | $3,500 | 1.09 | 0.41 |
| Dartmouth | K-12 | $3,423 | 1.07 | 0.40 |
| Athol Royalston | K-12 | $3,357 | 1.05 | 0.39 |
| Northbridge | K-12 | $3,241 | 1.01 | 0.38 |
| Winchendon | K-12 | $3,219 | 1.01 | 0.37 |
| Gardner | K-12 | $3,200 | 1.00 | 0.37 |

## Table 11.3. 1993 Total Per Pupil Expenditures of K-12 Districts with more than 1,500 students. Equity Comparison

| District | Grades | PPE | Ratio to Top | Ratio to Lowest |
|---|---|---|---|---|
| Cambridge | K-12 | $8,742 | 2.63 | 1.00 |
| Weston | K-12 | $7,548 | 2.27 | 0.86 |
| Westwood | K-12 | $7,527 | 2.26 | 0.86 |
| Bedford | K-12 | $7,118 | 2.14 | 0.81 |
| Wellesley | K-12 | $6,962 | 2.09 | 0.80 |
| Watertown | K-12 | $6,618 | 1.99 | 0.76 |
| Brookline | K-12 | $6,558 | 1.97 | 0.75 |
| Lexington | K-12 | $6,449 | 1.94 | 0.74 |
| Berkshire Hills | K-12 | $6,427 | 1.93 | 0.74 |
| Newton | K-12 | $6,409 | 1.93 | 0.73 |
| Natick | K-12 | $6,383 | 1.92 | 0.73 |
| Waltham | K-12 | $6,359 | 1.91 | 0.73 |
| Westborough | K-12 | $6,271 | 1.89 | 0.72 |
| Arlington | K-12 | $6,254 | 1.88 | 0.72 |
| Wayland | K-12 | $6,237 | 1.88 | 0.71 |
| Somerville | K-12 | $6,169 | 1.86 | 0.71 |
| Boston | K-12 | $6,109 | 1.84 | 0.70 |
| Winchester | K-12 | $5,968 | 1.79 | 0.68 |
| Burlington | K-12 | $5,939 | 1.79 | 0.68 |
| Dedham | K-12 | $5,836 | 1.76 | 0.67 |
| Belmont | K-12 | $5,788 | 1.74 | 0.66 |
| Needham | K-12 | $5,765 | 1.73 | 0.66 |
| Danvers | K-12 | $5,755 | 1.73 | 0.66 |
| Norwood | K-12 | $5,722 | 1.72 | 0.65 |
| Framingham | K-12 | $5,699 | 1.71 | 0.65 |
| Norwell | K-12 | $5,698 | 1.71 | 0.65 |
| Longmeadow | K-12 | $5,669 | 1.70 | 0.65 |
| Canton | K-12 | $5,665 | 1.70 | 0.65 |
| Quincy | K-12 | $5,587 | 1.68 | 0.64 |
| Lynnfield | K-12 | $5,533 | 1.66 | 0.63 |
| Woburn | K-12 | $5,415 | 1.63 | 0.62 |
| Medford | K-12 | $5,408 | 1.63 | 0.62 |
| Marblehead | K-12 | $5,379 | 1.62 | 0.62 |
| Winthrop | K-12 | $5,355 | 1.61 | 0.61 |
| Somerset | K-12 | $5,301 | 1.59 | 0.61 |
| Wilmington | K-12 | $5,273 | 1.59 | 0.60 |
| Central Berkshire | K-12 | $5,250 | 1.58 | 0.60 |
| Wakefield | K-12 | $5,234 | 1.57 | 0.60 |
| Andover | PreK-12 | $5,221 | 1.57 | 0.60 |
| Newburyport | K-12 | $5,131 | 1.54 | 0.59 |
| Swampscott | K-12 | $5,129 | 1.54 | 0.59 |
| Saugus | K-12 | $5,113 | 1.54 | 0.58 |
| Auburn | K-12 | $5,104 | 1.54 | 0.58 |
| Hingham | K-12 | $5,075 | 1.53 | 0.58 |
| Hamilton Wenham | K-12 | $5,063 | 1.52 | 0.58 |
| Marlborough | K-12 | $5,062 | 1.52 | 0.58 |
| Southwick Tolland | K-12 | $5,062 | 1.52 | 0.58 |
| Stoneham | K-12 | $5,039 | 1.52 | 0.58 |
| Salem | K-12 | $5,029 | 1.51 | 0.58 |
| Melrose | K-12 | $4,997 | 1.50 | 0.57 |
| Braintree | K-12 | $4,989 | 1.50 | 0.57 |
| Duxbury | K-12 | $4,986 | 1.50 | 0.57 |
| Ipswich | PreK-12 | $4,965 | 1.49 | 0.57 |
| Holyoke | K-12 | $4,951 | 1.49 | 0.57 |
| Ashland | K-12 | $4,937 | 1.48 | 0.56 |
| Southbridge | K-12 | $4,931 | 1.48 | 0.56 |
| Springfield | K-12 | $4,911 | 1.48 | 0.56 |
| Northampton | K-12 | $4,896 | 1.47 | 0.56 |
| Revere | K-12 | $4,889 | 1.47 | 0.56 |
| Dighton Rehoboth | K-12 | $4,878 | 1.47 | 0.56 |
| Hudson | K-12 | $4,861 | 1.46 | 0.56 |
| Gateway | K-12 | $4,861 | 1.46 | 0.56 |
| Medway | K-12 | $4,852 | 1.46 | 0.56 |
| Medfield | K-12 | $4,849 | 1.46 | 0.55 |
| North Reading | K-12 | $4,835 | 1.45 | 0.55 |
| Swansea | K-12 | $4,820 | 1.45 | 0.55 |
| Milton | K-12 | $4,807 | 1.45 | 0.55 |
| Scituate | K-12 | $4,796 | 1.44 | 0.55 |
| Pittsfield | K-12 | $4,772 | 1.44 | 0.55 |
| Worcester | K-12 | $4,764 | 1.43 | 0.54 |
| Fall River | K-12 | $4,705 | 1.42 | 0.54 |
| Falmouth | K-12 | $4,704 | 1.41 | 0.54 |
| Chicopee | K-12 | $4,703 | 1.41 | 0.54 |
| Shrewsbury | K-12 | $4,702 | 1.41 | 0.54 |
| Millbury | K-12 | $4,693 | 1.41 | 0.54 |
| Dennis Yarmouth | K-12 | $4,691 | 1.41 | 0.54 |
| Taunton | K-12 | $4,673 | 1.41 | 0.53 |
| Walpole | K-12 | $4,621 | 1.39 | 0.53 |
| Foxborough | K-12 | $4,615 | 1.39 | 0.53 |
| Westford | K-12 | $4,601 | 1.38 | 0.53 |
| Hopkinton | K-12 | $4,598 | 1.38 | 0.53 |
| Randolph | K-12 | $4,596 | 1.38 | 0.53 |
| Chelmsford | K-12 | $4,593 | 1.38 | 0.53 |
| Methuen | K-12 | $4,587 | 1.38 | 0.52 |
| Mansfield | K-12 | $4,585 | 1.38 | 0.52 |
| Weymouth | K-12 | $4,584 | 1.38 | 0.52 |
| Gill Montague | K-12 | $4,579 | 1.38 | 0.52 |
| Malden | K-12 | $4,534 | 1.36 | 0.52 |
| Gloucester | K-12 | $4,522 | 1.36 | 0.52 |
| Agawam | K-12 | $4,514 | 1.36 | 0.52 |
| Bellingham | PreK-12 | $4,509 | 1.36 | 0.52 |
| Sharon | K-12 | $4,504 | 1.35 | 0.52 |
| Seekonk | K-12 | $4,500 | 1.35 | 0.51 |
| Adams Cheshire | K-12 | $4,498 | 1.35 | 0.51 |
| Beverly | K-12 | $4,486 | 1.35 | 0.51 |
| North Andover | K-12 | $4,485 | 1.35 | 0.51 |
| Sandwich | K-12 | $4,477 | 1.35 | 0.51 |
| Blackstone Millville | K-12 | $4,466 | 1.34 | 0.51 |
| Barnstable | K-12 | $4,461 | 1.34 | 0.51 |
| Groton Dunstable | K-12 | $4,459 | 1.34 | 0.51 |
| Hanover | K-12 | $4,449 | 1.34 | 0.51 |
| Westport | K-12 | $4,439 | 1.34 | 0.51 |
| Billerica | K-12 | $4,432 | 1.33 | 0.51 |
| Stoughton | K-12 | $4,416 | 1.33 | 0.51 |
| Lynn | K-12 | $4,414 | 1.33 | 0.50 |
| Easton | K-12 | $4,412 | 1.33 | 0.50 |
| Ayer | K-12 | $4,409 | 1.33 | 0.50 |
| Webster | K-12 | $4,403 | 1.32 | 0.50 |
| North Adams | K-12 | $4,382 | 1.32 | 0.50 |
| Fairhaven | K-12 | $4,364 | 1.31 | 0.50 |
| Lowell | K-12 | $4,362 | 1.31 | 0.50 |
| Reading | K-12 | $4,326 | 1.30 | 0.49 |
| Wareham | K-12 | $4,317 | 1.30 | 0.49 |
| Plymouth | K-12 | $4,314 | 1.30 | 0.49 |
| Tewksbury | K-12 | $4,309 | 1.30 | 0.49 |
| New Bedford | K-12 | $4,298 | 1.29 | 0.49 |
| Peabody | K-12 | $4,290 | 1.29 | 0.49 |
| Bourne | K-12 | $4,286 | 1.29 | 0.49 |
| Milford | K-12 | $4,238 | 1.27 | 0.48 |
| Fitchburg | K-12 | $4,238 | 1.27 | 0.48 |
| Spencer East Brookfield | K-12 | $4,217 | 1.27 | 0.48 |
| Rockland | K-12 | $4,217 | 1.27 | 0.48 |
| Holliston | K-12 | $4,189 | 1.26 | 0.48 |
| Abington | K-12 | $4,189 | 1.26 | 0.48 |
| South Hadley | K-12 | $4,178 | 1.26 | 0.48 |
| Greenfield | K-12 | $4,177 | 1.26 | 0.48 |
| Attleboro | PreK-12 | $4,177 | 1.26 | 0.48 |
| East Bridgewater | K-12 | $4,156 | 1.25 | 0.48 |
| Chelsea | K-12 | $4,151 | 1.25 | 0.47 |
| Everett | K-12 | $4,150 | 1.25 | 0.47 |
| Easthampton | K-12 | $4,146 | 1.25 | 0.47 |
| Leominster | K-12 | $4,141 | 1.25 | 0.47 |
| Whitman Hanson | K-12 | $4,129 | 1.24 | 0.47 |
| Norton | K-12 | $4,128 | 1.24 | 0.47 |
| Lunenburg | K-12 | $4,120 | 1.24 | 0.47 |
| Lawrence | K-12 | $4,115 | 1.24 | 0.47 |
| Westfield | K-12 | $4,109 | 1.24 | 0.47 |
| Tyngsborough | K-12 | $4,104 | 1.23 | 0.47 |
| Brockton | K-12 | $4,096 | 1.23 | 0.47 |
| Quabbin | K-12 | $4,080 | 1.23 | 0.47 |
| Grafton | K-12 | $4,058 | 1.22 | 0.46 |
| Amesbury | K-12 | $4,037 | 1.21 | 0.46 |
| Ludlow | K-12 | $4,011 | 1.21 | 0.46 |
| East Longmeadow | K-12 | $3,972 | 1.19 | 0.45 |
| Haverhill | K-12 | $3,971 | 1.19 | 0.45 |
| Ashburnham Westminster | K-12 | $3,961 | 1.19 | 0.45 |
| Clinton | K-12 | $3,959 | 1.19 | 0.45 |
| Dartmouth | K-12 | $3,938 | 1.18 | 0.45 |
| Marshfield | K-12 | $3,917 | 1.18 | 0.45 |
| West Springfield | K-12 | $3,914 | 1.18 | 0.45 |
| North Middlesex | K-12 | $3,850 | 1.16 | 0.44 |
| Leicester | K-12 | $3,796 | 1.14 | 0.43 |
| Franklin | K-12 | $3,737 | 1.12 | 0.43 |
| North Attleboro | K-12 | $3,717 | 1.12 | 0.43 |
| Athol Royalston | K-12 | $3,695 | 1.11 | 0.42 |
| Oxford | PreK-12 | $3,664 | 1.10 | 0.42 |
| Dracut | K-12 | $3,649 | 1.10 | 0.42 |
| Northbridge | K-12 | $3,632 | 1.09 | 0.42 |
| Gardner | K-12 | $3,618 | 1.09 | 0.41 |
| Uxbridge | K-12 | $3,564 | 1.07 | 0.41 |
| Belchertown | K-12 | $3,536 | 1.06 | 0.40 |
| Winchendon | K-12 | $3,513 | 1.06 | 0.40 |
| Palmer | K-12 | $3,449 | 1.04 | 0.39 |
| Middleborough | K-12 | $3,433 | 1.03 | 0.39 |
| Carver | PreK-12 | $3,325 | 1.00 | 0.38 |

## Table 11.4. Five year per pupil expenditure growth in districts with more than 1,500 students. 1987-1992

| | |
|---|---|
| Acton Boxborough | 97% |
| Sandwich | 80% |
| Plymouth Carver | 64% |
| Plymouth | 63% |
| Ipswich | 58% |
| Dedham | 56% |
| Silver Lake | 55% |
| New Bedford | 54% |
| Longmeadow | 54% |
| Newburyport | 53% |
| Swansea | 52% |
| Peabody | 52% |
| Berkshire Hills | 50% |
| Milford | 49% |
| Agawam | 48% |
| Northampton | 47% |
| Norwell | 46% |
| Webster | 46% |
| Cambridge | 46% |
| Bellingham | 45% |
| Duxbury | 45% |
| North Attleborough | 45% |
| Westborough | 44% |
| Burlington | 44% |
| Westford | 44% |
| Natick | 43% |
| Billerica | 43% |
| Easthampton | 43% |
| Somerset | 43% |
| Grafton | 42% |
| East Bridgewater | 42% |
| Greenfield | 42% |
| Marlborough | 41% |
| Freetown Lakeville | 41% |
| Westwood | 41% |
| Taunton | 40% |
| Ashburnham Westminster | 40% |
| Falmouth | 39% |
| Norton | 39% |
| Amherst Pelham | 38% |
| Dennis Yarmouth | 38% |
| Lexington | 37% |
| Somerville | 37% |
| Danvers | 37% |
| Marshfield | 37% |
| Quincy | 36% |
| Springfield | 36% |
| Hingham | 35% |
| Westport | 35% |
| Southbridge | 35% |
| Fall River | 35% |
| Easton | 35% |
| Scituate | 35% |
| Medway | 35% |
| Brookline | 35% |
| Seekonk | 35% |
| Bedford | 35% |
| North Adams | 34% |
| Framingham | 34% |
| Norwood | 34% |
| North Andover | 34% |
| South Hadley | 34% |
| Tewksbury | 33% |
| Andover | 33% |
| Bourne | 33% |
| Concord | 33% |
| Mansfield | 33% |
| Gateway | 33% |
| Acton | 32% |
| Stoneham | 32% |
| Pittsfield | 32% |
| Weston | 32% |
| Leominster | 31% |
| Palmer | 31% |
| Arlington | 31% |
| Walpole | 31% |
| Auburn | 31% |
| Central Berkshire | 30% |
| Belmont | 30% |
| Hamilton Wenham | 30% |
| Sharon | 30% |
| Waltham | 30% |
| Marblehead | 30% |
| Foxborough | 30% |
| North Middlesex | 30% |
| Spencer East Brookfield | 30% |
| Wareham | 30% |
| West Springfield | 29% |
| Gill Montague | 29% |
| Clinton | 29% |
| Stoughton | 29% |
| Braintree | 29% |
| Winthrop | 29% |
| Leicester | 28% |
| Shrewsbury | 28% |
| Adams Cheshire | 28% |
| Holliston | 28% |
| Hanover | 28% |
| Chicopee | 28% |
| Newton | 27% |
| Worcester | 27% |
| Barnstable | 27% |
| Reading | 27% |
| Saugus | 26% |
| Lynnfield | 26% |
| Boston | 26% |
| Middleborough | 26% |
| Swampscott | 26% |
| Holden | 26% |
| East Longmeadow | 26% |
| Salem | 25% |
| Abington | 25% |
| Fitchburg | 24% |
| Ayer | 24% |
| Millbury | 24% |
| Wayland | 23% |
| Winchester | 23% |
| Milton | 23% |
| Rockland | 23% |
| Lowell | 23% |
| Athol Royalston | 23% |
| Dudley Charlton | 23% |
| Beverly | 22% |
| Wellesley | 22% |
| Quabbin | 22% |
| Ludlow | 22% |
| Medford | 22% |
| North Reading | 22% |
| Chelmsford | 21% |
| Canton | 20% |
| Chelsea | 20% |
| Wakefield | 20% |
| Belchertown | 20% |
| Everett | 20% |
| Hudson | 20% |
| Woburn | 19% |
| Watertown | 19% |
| Melrose | 19% |
| Amesbury | 19% |
| Medfield | 18% |
| Weymouth | 18% |
| Gardner | 16% |
| Gloucester | 16% |
| Brockton | 15% |
| Randolph | 15% |
| Malden | 15% |
| Franklin | 15% |
| Attleboro | 14% |
| Blackstone Millville | 14% |
| Dighton Rehoboth | 14% |
| Lynn | 13% |
| Lawrence | 13% |
| Wilmington | 12% |
| Needham | 12% |
| Dartmouth | 12% |
| Methuen | 12% |
| Haverhill | 11% |
| Sudbury | 11% |
| Westfield | 11% |
| Fairhaven | 10% |
| Oxford | 9% |
| Bridgewater | 3% |
| Dracut | 2% |
| Northbridge | 2% |
| Revere | 1% |
| Holyoke | -8% |

# GOAL

# 12

# Educational Accountability

This first report on the *Condition of Education* provides a glimpse into the system which we know as the public education system. This first *Condition* report seeks to establish benchmarks against which the progress of students, schools, school districts and the state can be measured both against other schools, school districts and states, but also against the performance of students in other nations.

Although this is only the first report, some observations are possible. To the extent that the NAEP, SAT and AP assessments provide for some comparisons, Massachusetts students tend to outperform students in other states. The data on drop-out rates, participation in SAT assessments, and the plans for post-secondary education of high school graduates tend to show that Massachusetts students have high expectation for themselves and understand the value of education.

There is, however, considerable room for improvement. While Massachusetts students tend to do well from a comparative standpoint, the assessments tend to demonstrate that a significant majority of students are not performing at a level which should be expected of students. Briefly stated, we need to do better.

It is hoped that this *Condition* report will inspire school committees and school councils to establish similar goals for their students, and will publish local *Condition* reports with clear indicators for progress on their goals.

The *Condition* report is not the only document which will provide insight into the progress of education reform in the next few months and years:

### The Education Reform Review Commission

The Education Reform Commission was established by the Education Reform Act. Its charge is to evaluate the progress of education reform. Annual reports can be expected beginning this fall.

### The Board of Education

The Board has developed an extensive series of benchmarks to plan the implementation of education reform and to effectively communicate to school districts what should be expected over a specific time frame. A subcommittee of the Board, the Massachusetts Education Reform Implementation Taskforce (MERIT), oversees this plan and continuously provides Commissioner of Education Robert Antonucci with its comments and analysis of progress. The Board's first report on the implementation of education reform was published in the summer of 1994 and can be expected annually thereafter.

### The Department of Education - Curriculum Frameworks

The Department of Education can be expected to report the first draft of the mathematics, science and technology frameworks this fall. In the spring of 1995, drafts of other frameworks will be released.

### The Commission on Time & Learning

Another section in the Education Reform Act directed the Board of Education to review the amount of time which students spent in schools in Massachusetts. The Board established a Commission which will be releasing a series of reports on the amount and definition of instructional time in schools, the structure of the school day, and the length of the school day and school year. These reports will be released throughout 1994-1995.

### The Bilingual Commission

The issues surrounding bilingual education were delegated to another Commission established by the Education Reform Act. The Bilingual Commission can be expected to issue its report by the end of 1994.

### The Early Childhood Commission

The need to provide children with a healthy start will be addressed by yet another Commission established by the Education Reform Act. The Early Childhood Commission is also expected to issue its recommendations by the end of 1994.